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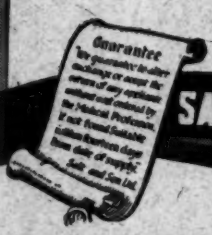

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JANUARY 21 1950

THYMECTOMY IN MYASTHENIA GRAVIS*

BY

HENRY R. VIETS, M.D.

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In reporting four years ago (Viets, 1945) on the effects of thymectomy in our first 15 patients subjected to this operation, I stated that the procedure was "still in the experimental stage, with slight but definite indications, however, that there is some relation between the thymus and myasthenia gravis." I find myself in practically the same position to-day, with more than double the number of cases to evaluate and a considerable augmentation of the literature on the subject, with case reports from other clinics, some larger than mine. The evidence of thymic involvement in myasthenia gravis is still present, and relatively unchanged; added experience has only confirmed my opinion of 1945. All cases here reported have been observed in my clinic for many years and have been operated upon by the surgeons of the Massachusetts General Hospital staff. Examinations of the thymic tissue, freshly removed at operation, have been made by the hospital pathologists. Each patient not surviving operation, or dying later, with one exception, has been examined at necropsy. Although the series is small, cases have been carefully controlled, both before and after operation. The condition of each patient is known as the result of personal observation.

NON-NEOPLASTIC THYMUS SERIES

Of the 36 patients with myasthenia gravis treated by thymectomy from 1941 to August, 1949, seven with thymoma are considered later. Four of the 29 with non-neoplastic thymuses at operation have died, three being consecutive operative deaths in 1943 (Cases 9, 10, 11) and one (Case 30) a subsequent operative death.

Operative Deaths from Thymectomy (Four Cases)

Case 9

A husky water-front watchman, married was first admitted on October 8, 1943, at the age of 31. He had developed dysarthria on extraction of a tooth, without procaine, nine months before admission. A week later, weakness of extension of the fingers, particularly the index finger, was noted, with increasing difficulty in raising mucus from the throat. In about six weeks the weakness became generalized; he fell in the street and developed additional symptoms of dyspnoea, inability to smile or whistle, and unilateral ptosis. Five months after the onset of his illness he became suddenly cyanotic. Neostigmine, subcutaneously, was given with marked beneficial effect; within an hour he felt like a "new man."

Course of Disease.—For the first five months after the onset, before the diagnosis, the patient had a relatively steady downward course. After the diagnostic test, which served as a therapeutic measure in a time of grave emergency, he was partially adjusted by 8 to 10 tablets of neostigmine (15 mg. each) in 24 hours, taken at intervals of two to three hours. The adjustment was far from satisfactory, for when I first saw the patient, four months after the treatment was begun, he showed weakness of the neck muscles, diplopia, ptosis, difficulty in holding his mouth closed and in chewing, inability to swallow solid foods, laboured speech, with nasal voice, and general muscular fatigue to such an extent that he could not run and even walking was troublesome. Owing to dysphagia his weight had fallen from 250 to 150 lb. (113 to 68 kg.) in a period of nine months. In hospital he continued to relapse. The oral neostigmine was raised to 24 tablets in 24 hours and a "booster" dose of neostigmine methylsulphate, 1 mg., was given subcutaneously. Although improved on this medication, he could not close his mouth firmly, smile, or talk without a nasal twang. A week in hospital brought him to a state of fair adjustment only, when thymectomy was done.

Thymectomy, October 16, 1943.—In order to maintain the patient during anaesthesia, 30 mg. of neostigmine methylsulphate and 3 mg. of atropine sulphate were added to 1,500 ml. of a 5% dextrose solution and given intravenously at the rate of 60 drops (3 ml.) per minute. Thus 3.65 mg. of neostigmine methylsulphate was delivered to the patient each hour. The entire 1,500 ml. was used in a period of slightly over eight hours. This medication was started half an hour before operation, and it was planned to follow the first eight-hour treatment with a second or third 1,500 ml. of the solution if advisable. Anaesthesia was induced by a gas–oxygen–ether mixture. Shortly after intubation, respirations ceased and artificial respiration was used from that point on throughout the three-hour operation. Thymectomy was accomplished through a midline sternal approach; the thymus was removed without difficulty.

Pathology.—There was a moderate amount of involution. Germinal centres were seen in the medulla, but they were not numerous. The separation of the cortex from the medulla was not conspicuous.

Post-operative Course.—The patient was immediately put in a respirator and his condition was considered fair. Twelve hours after operation he was conscious and showed slight ability to breathe voluntarily, although he was still maintained in the respirator. Intravenous medication with neostigmine was continued. Two days after operation he was still being maintained on intravenous medication and artificial respiration. In spite of these measures he had a respiratory crisis usually every six to eight hours, associated with a large accumulation of mucus in the trachea and major bronchi. Some of the thick secretions were aspirated through a bronchoscope. This procedure was

*Read at the Fourth International Neurological Congress, Paris, September 5–10, 1949.

repeated on subsequent days, but bronchopneumonia, with pulmonary atelectasis and hydrothorax, developed and the patient died on the eighth post-operative day.

Necropsy.—There was a well-marked bronchopneumonia with pulmonary atelectasis of the left lower lobe and hydrothorax on the left.

Comment.—Prior to thymectomy an attempt was made to estimate the amount of intravenous neostigmine needed to maintain this patient adequately during the course of the operative anaesthesia and for a post-operative period of hours. After investigation it was estimated that he would require 30 mg. of neostigmine methylsulphate intravenously in a period of eight to nine hours. This proved to be in excess of the actual needs, and the excessive use of neostigmine may well have been a deciding factor in causing the cessation of respiration shortly after the anaesthesia was started and even the patient's ultimate death. The dosage used, given at the rate of 3,600 drops (180 ml.) an hour, delivered 3.65 mg. of neostigmine methylsulphate intravenously. Before operation the patient had been only moderately maintained on two 15-mg. tablets by mouth every two hours or 15 mg. of neostigmine bromide per hour. Subsequent investigation disclosed that a satisfactory formula was as follows: 15 mg. of neostigmine bromide taken by mouth is equivalent in effect to 0.5 mg. of neostigmine methylsulphate given subcutaneously or intravenously. This patient received about seven times this dose, or an equivalent of 105 mg. of neostigmine bromide by mouth per hour. The excessive secretions in the bronchial tree, as disclosed both clinically and at necropsy, plus the necessity for artificial respiration soon after the intravenous medication was started before the operation, indicated that the patient received more neostigmine than was desirable and that even the effect of the excessive dose was not overcome by additional atropine sulphate, given freely in the post-operative period by subcutaneous injection.

Three Other Cases

Of the other three patients who died operative deaths following thymectomy, two occurred immediately after Case 9 in 1943. At that time considerable difficulty was being encountered in adjusting the intravenous dose of neostigmine in order to maintain the patient adequately during the operation. The question of the proper anaesthetic for thymectomy was also being investigated. Before this time, gas–oxygen–ether mixture had been used by intubation, and it was often necessary to support the patient by artificial respiration during the operation, as in Case 9.

Case 10.—This patient, a married man, was first admitted on December 11, 1942, at the age of 62. He had had symptoms of myasthenia only one month before his admission to hospital. He was not a favourable case for operation, partly on account of age but principally because of arteriosclerosis. In August, 1942, he developed a right hemiplegia subsequent to a cerebral thrombosis. This had partially disappeared by the time he entered hospital. Intravenous neostigmine was not used during the operation. The same gas–oxygen–ether mixture was employed. The thymus was removed, but the pleura was opened on both sides and the right lung was punctured. The patient died of massive collapse of the right lung within 24 hours.

Case 11.—This patient, a single woman, was first admitted on November 22, 1943, at the age of 24. She had had symptoms of myasthenia gravis for four years, and at the time of admission she was well maintained on 10 to 12 tablets of neostigmine a day. She seemed to be a good subject for operation, and thymectomy was done in December, 1943. During the operation she was maintained on 1.5 mg. of neostigmine methylsulphate per hour, which would correspond to three tablets of neostigmine bromide. Anaesthesia was introduced by gas–oxygen–ether mixture. After operation the patient was still maintained on intravenous neostigmine, 1 mg. per hour. Subsequently she returned to oral neostigmine, but as this was not satisfactory the intravenous preparation was again instituted. She had a severe relapse of her myasthenia, but was immediately revived by intravenous treatment. Her condition was precarious, however, for even when the intravenous therapy was stopped for a few minutes she had a myasthenic crisis. Difficulty was encountered in continued intravenous therapy after the third or fourth post-operative day, and the patient died of respiratory paralysis seven days after the thymectomy. The thymus showed moderate involution with a considerable number of germinal centres.

Case 30.—A married woman aged 49 was first admitted on January 6, 1949. She had had symptoms for about a year before admission, mainly ptosis and diplopia. She took neostigmine for three months before her thymectomy in January, 1949. She required a high dosage, up to 28 tablets a day, but was only fairly well regulated at the time of operation. Intravenous neostigmine was not used, but the anaesthetic was cyclopropane. Because of respiratory failure she entered a respirator on the first post-operative day and died suddenly of respiratory paralysis the next day. The thymus showed a moderate amount of involution and no germinal centres.

Comment on Cases 10, 11, and 30.—Death occurred immediately or within a few days after operation in each case. Presumably this was due to improper handling of the patients at the time of operation. Certainly this was so in the two cases that did not have the advantage of a properly adjusted amount of neostigmine given intravenously during the operative procedure. The initial dosage was incorrect and control was not maintained uniformly for a long enough period after the thymectomy. Cyclopropane anaesthesia was also an important factor in maintaining patients during the operative period. In two cases this drug was not used. Prolonged exploration may also be a factor in deaths from thymectomy. An effort to locate thymus tissue in areas above or below the usual field of exploration is justifiable provided it does not require a great extension of time. There are other technical factors, moreover, that make the operation hazardous, such as opening the pleura; but these are now controlled in most cases, and a long series of operations without fatality has been carried out since 1943, with the exception of Case 30 and a patient with a thymoma operated on in 1945 (Case 14).

Patients without Thymoma Surviving Thymectomy (25 Cases)

In the series of patients without thymoma there were 25 who were living in August, 1949: one had survived eight years (Case 1); three, seven years (Cases 2–4); one, six years (Case 7); two, five years (Cases 12 and 13); three, two years (Cases 16–18); eight, one year (Cases 19, 21–27); and seven, less than one year (Cases 29, 31–36). The cases may be divided into two groups: seven surviving five years or more and 18 surviving less than five years.

Patients Surviving Five Years or More (7 Cases)

Case 1.—This patient, a married man, was first admitted on June 23, 1939, at the age of 27. Thymectomy was done on December 5, 1941. Previous *x*-ray treatment over the thymic region had failed to give relief, but the patient was nearly free from general weakness on 14 tablets of neostigmine a day during a period of over two years before operation. His diagnostic test, equivocal at the onset, became definitely positive within a year. The thymus was partly involuted; there were a large number of germinal centres (Castleman and Norris, 1949, Case 14). After thymectomy the patient was still unable to work, and for eight years his symptoms have remained relatively fixed on an intake of 8 to 14 tablets a day. All the gain, estimated at 20%, was made in the first year after operation. The reason for his feeble response is not clear; other patients with a large number of germinal centres in the thymus have shown a more favourable reaction to thymectomy (Cases 16, 21, and 22). His improvement is classed as "poor to fair."

Case 3.—A married woman was first admitted on March 31, 1932, at the age of 22. Thymectomy was done on March 18, 1942, after more than 10 years of illness. During two pregnancies in this period she had an almost complete remission of symptoms, only to return to her previous level of myasthenia,

requiring about 12 tablets a day (Viets, Schwab, and Brazier, 1942, Case 1). *X*-ray treatment of the thymic region failed to influence the course of her disease. The effect of thymectomy was dramatic. Within two weeks all symptoms disappeared, and no medication has been required from that time for a period of over seven years of post-operative observation. The thymus was slightly involuted and showed numerous germinal centres, but not so many as in Case 1 (Castleman and Norris, 1949, Case 17). Her condition in August, 1949, was excellent.

The five other patients in this series (Cases 2, 4, 7, 12, and 13) showed no distinctive feature. One result was "fair," one "fair to good," one "good," one "good to excellent," and one only "poor to fair" (Table I). Age, sex, duration of disease, length

TABLE I.—*Patients Surviving Five Years or More (7 Cases)*

Case No.	Sex	Age at Onset	Years of Pre-operative Treatment	Age at Operation	Years of Post-operative Observation	Condition in 1949
1	M	26	2½	29	8	Poor to fair
2	F	13	4½	21	7½	Fair
3	F	21	6	32	7½	Excellent
4	M	30	5	35	7½	Good to excellent
7	M	18	1	19	6	Fair to good
12	F	18	1	19	5½	Poor to fair
13	M	33	6	46	5	Good

of previous treatment with neostigmine, *x*-ray treatment, and condition of the thymus at operation were factors that could not be correlated with the degree of improvement after thymectomy. It is of note, however, that *all patients were improved; none made worse.* The patient (Case 3) who was most favourably affected by her pregnancies was also most helped by thymectomy. She has the best record of any patient in the group surviving more than five years. Thus the endocrine aspects of myasthenia gravis are emphasized again, as they have been in the past.

Cases Surviving Less than Five Years

Of the 18 cases surviving less than five years, seven were operated upon in 1949, with their post-operative course too brief to be of value in estimating results (Table II).

TABLE II.—*Patients Surviving Less than Five Years (18 Cases)*

Case No.	Sex	Age at Onset	Years of Pre-operative Treatment	Age at Operation	Years of Post-operative Observation	Condition in 1949
16	F	29	3	32	2+	Good
17	F	24	1½	32	2+	Poor
18	F	21	2½	23	2	Fair
19	F	27	2	29	1+	Excellent
21	M	20	2	22	1+	Good to excellent
22	F	11	1+	13	1+	Fair to good
23	M	19	5	25	1+	Good
24	F	30	2	33	1+	,,
25	F	29	5	36	1+	,,
26	M	18	2	21	1+	Poor
27	F	17	4	22	1	Excellent
29	F	25	1	26	Months	Too soon to estimate
31	M	33	5	40	,,	,, ,,
32	F	24	10	39	,,	,, ,,
33	F	19	6	26	,,	,, ,,
34	F	15	2	18	,,	,, ,,
35	F	21	3	26	,,	,, ,,
36	F	28	1	29	,,	,, ,,

Five cases (Cases 17, 19, 21, 25, and 27) are chosen to illustrate the trends noted in the entire group of 11.

Case 17.—This patient, a single woman, was first admitted on April 1, 1946, at the age of 30. In 1940 she first noted intermittent double vision. She improved slightly, only to relapse in 1944 with nasal speech, ptosis, difficulty in swallowing, and regurgitation of liquids. A neostigmine test was positive and treatment was started in October. She was much better from October, 1946, to March, 1947, and was able to work part-time as a bookkeeper. She then relapsed, with increasing difficulty in swallowing, general weakness, "stiffness" of tongue and lower lip, and ptosis, and grew slowly worse, losing 40 lb. (18 kg.) in weight. She never responded well to medication despite careful regulation. On June 10, 1947, under anaesthesia induced by cyclopropane, thymectomy was accomplished through a midline sternal approach. The thymus was removed without difficulty. There was marked involution, without germinal centres.

The immediate post-operative course was complicated by pneumo-hydrothorax. There was, however, an immediate response and the patient was able to reduce her intake from 12 to 7 tablets a day. This improvement continued for almost a year after thymectomy, when she began to relapse. She also had a tendency to respiratory infections, which always stimulated a relapse. Because of her continued relapse and lack of response and tolerance to increased dosage, the question of removal of further lymphoid tissue was raised. A splenectomy under cyclopropane was performed. When last seen in July, 1949, although her general strength seemed better, she still had difficulty in swallowing, nasal speech, ptosis, and diplopia.

Comment on Case 17.—The response to both thymectomy and splenectomy was unsatisfactory. Although some improvement was recorded immediately after operation, as is often the case, the gain was not held after the first year, and the general course of her disease was almost unchanged. Involution, at 32, had become so pronounced that the patient had largely thymectomized herself. In general, patients with marked involution of the thymus at operation have not had the most favourable results.

Case 19.—A married Chinese woman was first admitted on June 10, 1946, at the age of 28. She first noted difficulty in smiling and holding lips tense in September, 1945. Within two weeks her voice developed a nasal quality. In October, 1945, a diagnosis of myasthenia gravis was made. In January, 1946, she was unable to stand or walk because of the onset of leg weakness. A severe respiratory disorder developed requiring treatment in the respirator and hospital treatment for three months. Her weight dropped from 115 to 90 lb. (52 to 41 kg.) within a year. She was unable to comb her hair or put on a coat. While in the hospital she received *x*-ray treatment to the thymic region—600 r in all. Immediately after this her medication had to be increased but was soon reduced again. The rate of improvement was stationary for three months before admission for thymectomy. She had gained weight, was able to walk up three or four flights of stairs and to comb her hair, and she no longer had diplopia. Difficulty in swallowing was still present. She was moderately well maintained on five tablets a day. On November 13, 1947, under anaesthesia induced by cyclopropane, thymectomy was accomplished through a midline sternal approach. The thymus was removed without difficulty. There was a slight amount of involution of the thymus, with moderate to marked germinal centres.

The patient immediately did well post-operatively. She occasionally took two or three tablets a day if doing a lot of work. When talking for any length of time there was a tendency to a nasal voice, which was her only sign of the disease. She has continued to improve steadily and has been able to lead a normal social life. Her condition was excellent in August, 1949, nearly three years after thymectomy, when she was almost symptom-free.

Comment on Case 19.—The patient had a severe type of myasthenia gravis, with respiratory crises, requiring hospital treatment for months, tube-feeding, the respirator, and almost constant medication. She was as desperately ill as any patient in our series. By waiting for a favourable moment for operation, when the patient was well adjusted on a minimal amount of neostigmine, thymectomy was accomplished without difficulty. The operation was not one of "desperation," for the time was carefully chosen. In spite of her two-year preoperative course, with a large neostigmine dosage required over many months, both by mouth (30 tablets) and by intramuscular injection, her response was excellent, nearly as good as that of any patient in our series. It should be remembered that this patient's illness since the start was characterized by spontaneous remission and relapses, some of several months' duration. No remission had lasted as long, or had been so complete, however, as her post-operative course.

Case 21.—A single Peruvian man was first admitted on February 12, 1948, at the age of 22. His first symptoms

occurred in July, 1946. Difficulty in using his lips was followed within a month by diplopia and weakness of bite and grip; the fourth and fifth fingers could not be fully extended. His speech became nasal and he could not hold up his head easily. A diagnosis of myasthenia gravis was made almost immediately; an injection of neostigmine made him feel "like a new person." In August, 1947, he had a relapse, requiring an increase to 24 tablets a day. On March 1, 1948, under anaesthesia induced by cyclopropane, thymectomy was accomplished through a midline sternal approach; the thymus was removed without difficulty. Involution was slight; germinal centres were seen in large numbers. The patient felt a little worse after the operation and was maintained on neostigmine by injection. He gradually changed to 22–24 tablets a day. Some days he was able to reduce this to 18. There was not much improvement in the first year, but subsequently he gained rapidly, and by August, 1949, his condition was classed as "good to excellent."

Comment on Case 21.—The chief characteristic in this patient was the slow response to thymectomy. Remission was not marked until the second year after operation. The large amount of neostigmine required before operation did not prevent a good result, although the improvement was delayed.

Case 25.—An unmarried graduate nurse was first admitted on May 17, 1948, at the age of 35. She first noted difficulty in speaking and swallowing, and general weakness, while recovering from rheumatic fever in 1942. Six months later a test for myasthenia gravis was made, with dramatic results. She was adjusted on 10 to 14 tablets of neostigmine a day. Two courses of *x*-ray treatment were followed by a remission, reducing her intake to four or five tablets. A relapse in 1946 necessitated 18 tablets. The patient did well on this schedule until 1947, when another relapse occurred and the dosage was increased to 25 tablets. In March further *x*-ray treatment of the thymus brought no improvement. She had great difficulty with facial and ocular musculature. On May 21, 1948, under anaesthesia induced by cyclopropane, thymectomy was accomplished through a midline sternal approach; the thymus was removed without difficulty. Involution was marked; no germinal centres were seen.

The patient's post-operative condition was satisfactory; her general strength was good, she was able to smack lips, close eyes fairly tight, and hold out fingers. She relapsed, and neostigmine was gradually increased to 47–48 and finally to 57 tablets, and then was gradually reduced to 42. The patient was stronger, better adjusted, and felt much better than in September, 1947. Six months after operation she had a difficult time, with frequent and severe colds, but finally she was able to return to her regular schedule of 32 tablets a day. Eight months after thymectomy she was still on the same schedule, but symptoms and complaints were less severe than previously. She works in her office from 8.30 a.m. to noon every day.

Comment on Case 25.—Immediately after operation the patient relapsed. Neostigmine dosage had to be raised to 57 tablets a day before good adjustment was accomplished—a larger dose than any previous patient in our series had required. I was not under the impression that the patient was "resistant" to the medication, only that her needs were large because of the depth of her relapse. Adjustment was good at her high level of intake, almost as good as any seen in patients requiring large amounts of neostigmine. She was not improved by additional intramuscular treatment, for this only evoked parasympathetic stimulation without affecting the myasthenia gravis. We have come to disregard the *amount* of neostigmine needed to carry a patient through a relapse, realizing that, if the patient is to survive, the "deficiency" must be made up no matter what the amount required. *Most instances of "resistance" are examples of underdosage.*

Case 27.—This patient, a single woman, was first admitted on August 10, 1948, at the age of 22. In 1943 she noted progressive difficulty in swallowing and talking. Six months later there was gradual onset of weakness of knees and legs, and ptosis; weakness would begin about one hour after awakening. The patient was able to eat breakfast but not other meals. Neostigmine relieved her symptoms so that she was able to work as a part-time salesgirl. In 1947 her symptoms returned and her intake was increased to five tablets a day. In April, 1948, she developed weakness of her hands and had to stop work for an hour and rest. On August 16, 1948, under anaesthesia induced by cyclopropane, thymectomy was accomplished through a midline sternal approach. The thymus was removed without difficulty. Involution was slight; germinal centres were found frequently.

After operation the patient was maintained on 10 tablets a day. About a month later she was able to reduce her intake to two tablets, and felt about 85% better than previously. She was able to return to work. In May, 1949, the patient was taking half a pill in the morning and occasionally half a pill at night; there were no symptoms of myasthenia on this dosage.

Comment on Case 27.—The response to thymectomy occurred within a month and has remained nearly complete for the first post-operative year. The result was excellent—as good as in Case 19, but the response in this case was more prompt.

THYMOMA SERIES

Seven patients in the total series of 36 treated by thymectomy proved to have a thymoma embedded in or replacing most of the thymic tissue. Six of the tumours have been described in detail by Castleman and Norris (1949), comprising Nos. 1, 2, 3, 4, 6, and 8 of their series of 10 cases, the other four being necropsy specimens and therefore not included in our thymectomy group. One additional case (No. 28) not reported by Castleman and Norris (1949) has been used in our series.

Of the seven patients with thymoma, only three were living in 1949: one had survived six years (Case 8); one, two years (Case 15); and one, nine months (Case 28). Two of the four non-survivors were "operative deaths," occurring 24 hours (Case 5) and four days (Case 14) after thymectomy; each of the other two patients died of myasthenia gravis one-and-a-half years after operation (Cases 6 and 20). In the course of the years since our first thymectomy for thymoma (Case 5), in July, 1942, much has been learned about the type of patient who can survive such an extensive surgical procedure as thymectomy, the patient's needs for a balanced medication during and immediately after the operation, and the optimal time for doing the operation. The knowledge acquired, which may be modified as more experience is had, is illustrated by the following selected case reports and the comment on them.

Patients with Thymoma Surviving Thymectomy (3 Cases)

Case 15

A married woman was first admitted on October 15, 1946, at the age of 47. One year before admission she first experienced general fatigue and ptosis. Because of serious illness in her family, her condition was thought to be on a psychogenic basis. Three months before admission her condition had progressed; her voice became nasal, food regurgitated through her nose, there was difficulty in chewing, and weakness of arms prevented her from being able to comb her hair. Her symptoms were made worse by activity and relieved by rest. A diagnosis of myasthenia gravis was made and subsequently neostigmine was given by mouth, 15 mg. four times a day. On this medication her symptoms disappeared.

Course of Disease.—Still maintained on four tablets a day, the patient was admitted to the hospital because a radiograph revealed an oval, sharply defined, smoothly rounded mass lying in the left upper mediastinum, anteriorly. The anterior border almost touched the sternum. The mass was lobulated and there was some calcification near its margin. Because of the mediastinal tumour, thymectomy was advised although the short duration of her symptoms, the quick and adequate response to neostigmine, and the mild nature of her disease were not thought to be important enough to justify the operation.

Thymectomy, November 18, 1946.—The patient received 10 mg. of neostigmine methylsulphate and 2 mg. of atropine sulphate in 1,500 ml. of a 5% dextrose solution, given intravenously during a period of about eight hours during and following the operation. Anaesthesia was induced by cyclopropane. Thymectomy was accomplished through a midsternal approach, and the thymus and a mass consistent with a thymic tumour were removed without difficulty.

Pathology.—The tumour is described and pictured by Castleman and Norris (1949) as Case 3 in their series. It conformed to pattern II, with about an equal number of epithelial cells and lymphocytes. The uninvolved thymus was greatly involuted, with a few questionable germinal centres present in the medulla.

Post-operative Course.—The patient's condition following the operation was excellent and she was relieved of some symptoms immediately. Five days after operation all medication with neostigmine was discontinued, as she was free of myasthenia symptoms. She has been symptom-free since the operation, a period of two years and nine months. There has been no recurrence of the thymoma in the mediastinum.

Comment on Case 15

The response to neostigmine by mouth was so efficient in this case that without the mass in the mediastinum thymectomy would not have been advised. Our policy has been to control patients by oral medication, without operation, when the adequate maintenance dose is about 12 or fewer tablets a day. As spontaneous remissions in myasthenia gravis are not infrequent, this patient might have responded as well to medication as she did to thymectomy. The disclosure of the mass by radiograph made operation justifiable, although not an emergency. One of our patients, not in this series, has survived since 1935 with a mass in the mediastinum: although an example of severe myasthenia gravis, thymectomy has not been done, partly because of the patient's marked tendency to remissions, both spontaneous and during pregnancy (Viets, Schwab, and Brazier, 1942, Case 7).

The finding by radiograph of a mass in the anterior mediastinum in a myasthenic, however, indicates with a high degree of probability that a thymoma is present. Operation may or may not be advised, the decision being based on the total picture of the patient's illness and not solely on the dramatic disclosures by radiograph. Some thymomas take on an invasive character, although, as Castleman and Norris (1949) state, "By and large, the thymoma of myasthenia gravis should be considered as a benign neoplasm." An example in our series of local spread is detailed below in Case 20. Implantations may occur, but, at least in some cases, these are post-operative, as in our Case 6. Tumours of the size found in this patient, however, may become adherent to the pleura and encompass the phrenic nerve. Removal therefore was indicated on the grounds of obstruction, although the condition in the mediastinum could not be visualized before operation.

The prompt remission after operation, plus the duration of the improvement over a period of two years, was encouraging. Remissions of equal quality, without thymectomy, in early mild cases such as this patient showed are too common to make one feel that the operation resulted unmistakably in her improved state of health. Time only will supply the answer to the question of prognosis. The pathological changes in the thymus fully justified the removal of the tumour in this patient, no matter what effect the thymectomy may have on her myasthenia gravis in the future.

Case 28

A single male mill worker was first admitted on January 31, 1940, at the age of 28. He first developed symptoms in November, 1939, when he awakened one morning with ptosis and diplopia. Within a few weeks difficulty in chewing developed and liquids regurgitated through his nose. When singing in church he noticed a nasal quality to his voice. These symptoms were followed by generalized weakness of arms and legs, and at one time his right leg gave way and he fell. He was able to raise himself, but fell again and had to be carried indoors. On admission to hospital the diagnostic test was strongly positive (Schwab and Viets, 1938), and a diagnosis of myasthenia gravis was made (Mattis, 1941, photograph).

Course of Disease.—The patient was started on 11 neostigmine tablets a day, but the dosage was soon reduced to six a day. When difficulty in swallowing continued, an extra tablet was required before the morning and noon meals. After three weeks in the hospital he was able to go back to work in the mill, and for the next eight years he was well maintained on three to six tablets a day. His course was slightly irregular. By varying his intake slightly on a few occasions he was at one time able to go a whole year on 100 tablets. He curtailed his social activities only slightly. When he re-entered the hospital in November, 1948, nine years after the onset of symptoms, he still had traces of myasthenia. When medication was omitted there was considerable difficulty in swallowing and talking, although not quite as severe as in 1940. He again responded quickly to the diagnostic test. Radiographs of the chest were negative for thymic tumour.

Thymectomy, November 29, 1948.—The patient was maintained during the operation on eight-hour intravenous medication, containing 1 mg. of neostigmine methylsulphate. Anaesthesia was induced by cyclopropane, gas, and ether. Thymectomy was accomplished through a midline sternal approach; in the centre of the thymus was a non-invasive, definite, rounded hard nodule, which was removed without difficulty.

Pathology.—The nodule proved to be a thymoma conforming to pattern II. The surrounding tissue showed germinal centre formation similar in appearance to the non-neoplastic thymus of myasthenia gravis.

Post-operative Course.—The patient's immediate post-operative condition was excellent. On the sixth post-operative day he was well maintained on two tablets of neostigmine by mouth. His facial expression was as good as when following a diagnostic injection of neostigmine. After leaving hospital he continued to do very well, and after four months required no medication. His singing voice had improved in quality and range, even better than it was in 1939 before the onset of the disease. He was working steadily at a lathe in a mill without signs of fatigue (August, 1949).

Comment on Case 28.—After an explosive onset this case was characterized by a therapeutic remission lasting over eight years. Although well maintained on a moderate dosage of neostigmine during this period, the patient was never entirely free from symptoms. Thymectomy brought a complete remission. The post-operative observation period is short, but the immediate response to operation was unmistakable and more pronounced than had ever occurred under medical treatment. The disclosure of a thymoma at operation was unexpected. In spite of the tumour, the patient's reaction to neostigmine and response to operation were not dissimilar to that observed in non-neoplastic thymus cases.

Case 8

A married foundry worker was admitted on September 9, 1943, at the age of 28. In 1942 he noticed that his arms tired easily. It was difficult for him to bathe and dress at night after work. A week later, weakness of his jaw, with difficulty in chewing, occurred. When first seen, in 1943, his chief symptoms were general weakness, dysphagia and dysarthria, ptosis, mask-like face, and weakness of jaws. A test dose of neostigmine was dramatically effective.

Course of Disease.—He did quite well on a regime of 10 tablets of neostigmine a day and was able to do some light work. Three months before admission (June, 1943) he was doing so well that he decreased his intake, but a month later he had an exacerbation of his symptoms, with additional weakness. In spite of an increase of his dosage to 20 tablets, he did not return to his former status. At this time he had weakness of his legs, and four days before admission he suddenly collapsed while at work.

Thymectomy, September 27, 1943.—During the operation the patient received 16 mg. of neostigmine methylsulphate intravenously in eight hours. Anaesthesia was induced by a gas–oxygen–ether mixture. Thymectomy was accomplished through a midline sternal approach. Attached to the lower left arm of the thymus was an oval mass measuring 3.5 by 2.5 by 1.5 cm.

Pathology.—This case was reported in detail by Castleman and Norris (1949) (Case 1), illustrated with six photographs. The thymoma conformed to patterns I and II. The uninvolved thymus resembled in part the moderately involuted thymus of an adult; Hassall's corpuscles were present, with a rare germinal centre.

Post-operative Course.—After the operation the patient was adjusted on 20 tablets of oral neostigmine a day, about the same dose as he had required before operation. He slowly improved, and five months after operation he was fairly well maintained on his schedule of 14 to 16 tablets a day. He missed his medicine immediately if he did not take it, but he felt he had improved. He maintained this improvement through the subsequent six years, although unable to work. In May, 1947, he re-entered the hospital for *re-exploration of the mediastinum.* No further thymic tissue was found. On discharge he returned to neostigmine tablets, taking 16 a day. When last seen in August, 1949, he was taking 14 tablets a day. His voice was nasal and his swallowing poor.

Comment on Case 8

This case was reported in a previous paper (Viets, 1945, Case 5, two photographs). The results of thymectomy were disappointing—so much so that re-exploration was done in the hope of finding an aberrant thymus, overlooked at the time of the first operation. No neoplastic or other thymic tissue was found. After thymectomy the patient's course became more steady, and in spite of the need for large doses of neostigmine he felt "safe," sure that the neostigmine would not fail him in times of stress or become less effective. This feature of lessening of the depth and height of the relapses and remissions following thymectomy is often a favourable effect of this operation. Nearly all patients are impressed by the post-operative evenness of their course compared with the pre-operative period. Although the operation in this case is a "failure," the patient would consider himself 25 to 50% improved.

Operative Deaths from Thymectomy (2 Cases)

Case 5

An unmarried crane operator was first admitted on July 20, 1942, at the age of 41. In August, 1941, he had regurgitation of liquids through his nose. In a few days he developed ptosis, weakness of the hands, and dysphagia. His symptoms varied with the amount of work he did; they disappeared after rest. About three months after the onset, neostigmine by injection gave him complete relief of all his symptoms in half an hour.

Course of Disease.—He was able to continue his work on four tablets, plus a few injections, but he was not well controlled. His weight dropped from 265 to 222 lb. (120 to 101 kg.). His symptoms were not controlled on 11 tablets, and the dosage was gradually increased to 16 tablets; on admission to hospital he was given 20 tablets a day.

Thymectomy, July 23, 1942.—Neostigmine was given by injection before operation. During the last half of the thymectomy the patient was unable to breathe spontaneously and was maintained by artificial respiration. Anaesthesia was induced by a gas–oxygen–ether mixture. Thymectomy was accomplished through a midline sternal approach. The thymus, which appeared grossly normal, was removed, but the operation was a difficult one, requiring over four hours.

Post-operative Course.—The patient was put into a respirator immediately on his return from the operating-room. He also received neostigmine and atropine. He did not regain consciousness and was very restless, ripping off his bandages. On the first post-operative day he was still not responsive, but seemed to be in relatively good condition, with normal temperature, good colour, and warm skin. He suddenly became cyanotic, and despite the fact that the respirator was working satisfactorily his air exchange was not adequate. He died on the second post-operative day.

Pathology.—The thymic tissue was moderately involuted. Hassall's corpuscles were present in normal numbers; many germinal centres were seen in the medulla.

At necropsy a thymoma was found at the root of the left lung anterior to the bronchus. The tumour conformed to patterns I and II. Reported by Castleman and Norris (1949. Case 2), with three photographs.

Comment on Case 5

The operation, at the time of a relapse in the disease, was one of desperation. This was one of our early cases (1942), and taught us a lesson: *thymectomy should never be undertaken as an operation of desperation.* Patients in a state of relapse present such a severe surgical risk that operation under these circumstances is not justified. Secondly, without adequate neostigmine maintenance during anaesthesia, operations are often hazardous. Subsequent to our experience with this patient we learned to give neostigmine intravenously, a discovery that removed the danger of sudden myasthenic collapse while the patient was unconscious. No operative deaths have occurred in our entire series since December, 1945 (Case 14), a period covered by 22 consecutive cases. This favourable result can, at least in part, be attributed to the balanced maintenance of the patient by intravenous neostigmine during operation. As the result of the necropsy on this patient we learned that a tumour might not disclose itself at operation. Owing to many disturbing factors, a complete exploration could not be done; the tumour was overlooked and found only at necropsy.

Finally, the post-operative care was inadequate. With intravenous medication, as carried out on later patients, myasthenic crises are avoided and maintenance is so controlled that the chances of recovery from thymectomy are greatly enhanced. Patients are not infrequently out of bed on the second or third day, and even are ready to leave the hospital before stitches are removed on the eighth post-operative day.

Case 14

This patient, a single man, was first admitted on November 21, 1945, at the age of 28. In 1941 a mass at the right border of the heart, thought at first to be a dilated auricle, was disclosed by *x*-ray examination. At that time he was free of symptoms suggesting myasthenia gravis, but he had noted easy fatigue and occasional dyspnoea for a period of five years. Immediate *x*-ray treatment is reported to have decreased the size of the mass. When first seen in 1942 he was symptomless except for the changes noted in the radiographs. A satisfactory clinical diagnosis could not be made; the mass suggested lymphoma, dermoid, or aneurysm. In 1943 transient diplopia, with mild dysphagia and dysarthria, all symptoms responding quickly to neostigmine, made a diagnosis of myasthenia gravis tenable. The patient responded quickly to treatment and a good remission, lasting nearly two years, followed.

In 1945, however, he had a severe relapse. By midsummer he was only partially maintained on 16 tablets of neostigmine a day. He lost 35 lb. (16 kg.) in four months and could swallow only with great difficulty. Medication was increased to 22 tablets a day, and operation was undertaken under the unfavourable conditions of an increasing relapse.

Thymectomy, December 8, 1945.—During operation the patient was maintained on intravenous medication of neostigmine at the rate of 1 mg. and 0.15 mg. of atropine an hour, so that in 24 hours he received 24 mg. of neostigmine and 3.6 mg. of atropine. Anaesthesia was induced by cyclopropane. Thymectomy was accomplished through a midline sternal approach; the thymus and tumour mass shown by radiograph were removed without difficulty.

Pathology.—The greater part of the tumour had undergone necrosis, being converted into an amorphous mass. The viable portions conformed to pattern II. The rim showed an occasional Hassall's corpuscle, and a single germinal centre was seen (Castleman and Norris, 1949, Case 8).

Post-operative Course.—After the operation the patient showed weakness and difficulty in respirations. He was given oxygen by nasal catheter and supplementary neostigmine by intramuscular as well as intravenous infusion. On the third post-operative day he was restless and twitching in bed, with an elevated pulse rate. Intravenous medication was discontinued. Next day he suddenly sat up on the edge of the bed, gasping. He soon became pulseless and respirations ceased.

Comment on Case 14

The most unusual feature of this case was the early disclosure of the thymoma by radiograph before unmistakable signs of myasthenia gravis developed. The unexplained fatigue noted by the patient many years before 1941 should have suggested the diagnosis. Moreover, the tumour mass, shown by radiograph, was entirely consistent with a thymoma. *When a mass which is clearly not an aneurysm is seen by radiograph in the anterior mediastinum in a patient whose full and detailed history reveals some symptoms of abnormal fatigue of voluntary muscles, no matter how slight, with recovery on rest, a diagnosis of myasthenia gravis, with thymoma, must be entertained.*

Operation, as in Case 5, was done at a most unfavourable time. Even with attempted intravenous treatment success could not be expected, as we were not sure, before operation, of the patient's full requirement for a balanced regime. The patient's requirements were changing (in this case increasing) and accurate measurement was impossible. Thus the rule of avoiding an operation of desperation was again disregarded in 1945 as it had been in 1942. Patients must be "levelled off" on neostigmine before intravenous needs can be measured, and that was not done in this case, the last in our series that failed to survive operation.

Intravenous Medication

The rule for intravenous medication may be conveniently stated here. As previously stated, each oral tablet of neostigmine bromide (15 mg.) is about equivalent in effectiveness to 0.5 mg. of neostigmine methylsulphate given intravenously. Thus a patient taking 12 tablets by mouth in 24 hours, or four in eight hours, requires 2 mg. of neostigmine methylsulphate intravenously in an equivalent eight hours. This may be conveniently added to 1,500 ml. of dextrose or saline and given intravenously just before, during, and after the operation. If the patient cannot swallow at the end of eight hours a second intravenous drip may be started, with a like amount of medication.

We have sometimes continued such treatment for 24 hours or longer, until such time as the patient could return to oral medication, either by tablet or tablets dissolved in syrup, or when treatment with neostigmine, in the case of a favourable and immediate response, was no longer needed. Patients taking 24 tablets a day require 4 mg. in eight hours, and so on. The dosage should be fixed for a week or more before operation. Watch for remissions and relapses. Only operate when the patient is steady, fully maintained, and well balanced on neostigmine. Hasty operations are sure to be unnecessarily hazardous.

Death from Expanding Tumour

Case 20

This patient, a married woman, was first admitted on December 18, 1947, at the age of 31. She had noted difficulty in swallowing in May, 1944. *X*-ray examination disclosed a mass in the anterior mediastinum. The shadow is reported to have decreased in size after *x*-ray treatment. In a few weeks her dysphagia subsided, only to return in about six weeks. In 1946 she developed diplopia and ptosis, dysarthria, marked dysphagia, and general muscle weakness. At that time a diagnostic test for myasthenia gravis was positive.

Course of Disease.—The patient continued to relapse in 1947, but finally a maintenance dose was established at 32 tablets a day—four tablets every two hours. On this dosage, higher than average, she was free from symptoms. Subsequently she was able to reduce her dosage to 16 tablets, but with the onset of a cold she relapsed and raised her intake to 24. Her condition was never satisfactory, as good balance could not be retained. On awakening in the morning she had to be helped until tablets could be taken; within 20 minutes she could get up, dress, and eat. She entered the hospital in December, 1947, for adjustment of her medication. While in the hospital she stopped taking neostigmine for 11 hours, at the end of which time her face was expressionless, her voice was nasal, and she was hardly able to stand; she also had difficulty in holding up her head, chewing, and swallowing. She responded promptly to a diagnostic test, all symptoms disappearing. Because of the mass in the mediastinum, an exploration of the area appeared to be justified.

Thoracotomy, December 23, 1947.—Anaesthesia was induced by cyclopropane. The tumour was enormous, filling the mediastinum. One portion was dense and adherent to the aorta. Removal was impossible; biopsy specimens were taken.

Pathology.—The firmer portions of the tumour conformed to pattern I, being largely epithelial in character. An occasional mitosis was seen. The softer areas were composed predominantly of lymphocytes conforming to pattern III (Castleman and Norris, 1949, Case 4, with two photographs).

Post-operative Course.—The patient had no untoward symptoms after the operation. Her myasthenia was somewhat better controlled than in the past and she was well maintained on 14 tablets a day. Because of the nature of the tumour disclosed at operation, daily *x*-ray treatment was given over the anterior mediastinum for about three weeks, using 200 r to 300 r at a time. During the course of the next year she was distinctly improved. At times she was able to reduce her medicine to nine tablets a day. About 18 months after the operation she developed a respiratory crisis, and she died in March, 1949, at the age of 33. Details of the necropsy are not available at the time of writing (August, 1949).

Comment on Case 20

The chief interest in this case lies in the discovery of a thymoma about the time of the onset of the patient's first symptoms. The tumour apparently responded to *x*-ray treatment in that the size of the shadow was decreased. The patient's symptoms, however, for the subsequent three years were unchanged, and she had the usual remissions and relapses in her symptoms of myasthenia. A sudden relapse three years after the onset led to a definite diagnosis and treatment with neostigmine. The therapeutic response was excellent, apparently as good as that experienced in patients without thymoma. Operation was undertaken at about the time that the patient was having a second relapse, but she was fairly well adjusted on medication and it seemed a favourable time for an exploration of the tumour.

At operation the entire anterior mediastinum was filled with tumour, some of it firmly adherent to the aorta and adjacent tissues; total removal was impossible. Biopsy specimens disclosed a thymoma, largely of the epithelial type. After the operation the patient again responded well to medication, and her course was similar to that seen in many patients without tumour. Details of the myasthenic crisis which occurred at the time of her death are not available, and there is no way of telling how much this was affected by the presence of the tumour. In general, one would feel that the tumour in this case did not change the pattern of the disease, although it may have definitely affected the course and led to the patient's death five years after the disease was first discovered.

Death Subsequent to Thymectomy

Case 6

This patient, a married man, was first admitted on March 17, 1942, at the age of 34. The disease began abruptly with rapid increase in symptoms. Within two weeks he developed weakness of his arms, diplopia, difficulty in chewing, and slight dysphagia. His speech became slurred and there was a tendency

for his jaw to hang half-open in the evening. Just before admission to hospital he fell because of weakness while walking upstairs.

Course of Disease.—His immediate response to neostigmine was excellent. The diagnostic test was strongly positive, including response to the swallowing reflex under fluoroscopic control (Schwab and Viets, 1941). He was adequately maintained on 10 tablets of neostigmine a day, by mouth, and subsequently returned to work for the next year moderately relieved but not entirely free from symptoms. He was unable to continue his occupation as a steel worker, and became a watchman, a position that did not involve the lifting of heavy objects. In about a year's time he had a moderate relapse, with increasing difficulty in chewing and swallowing. An increase of medication to 15 tablets a day only partially compensated for his weakness. He returned to hospital, but a satisfactory maintenance dose of neostigmine was not found. In spite of this, thymectomy was carried out.

Thymectomy, April 21, 1943.—The operation was carried out successfully under subcutaneous injection of neostigmine. Anaesthesia was induced by a gas–oxygen–ether mixture. Thymectomy was accomplished through a midline sternal approach. On opening the thorax, respirations ceased and artificial respiration was maintained from that point on. The thymus contained a tumour and was removed, in spite of its adherence to pericardium, without special difficulty.

Pathology.—The tumour was uniformly constituted and had nearly equal amounts of epithelial and lymphocytic tissue corresponding to pattern II. A few Hassall's corpuscles appeared to have been folded into the tumour along with bits of thymic tissue. No mitoses were found.

Post-operative Course.—The patient's immediate condition after operation was poor. He remained in the respirator for three days. On the eighth post-operative day he showed definite improvement and was able to swallow without difficulty. His neostigmine dosage was reduced to seven to eight tablets a day. In the six months following operation he improved steadily, reducing his intake to as low as two tablets a day. Within three months he returned to work. His position at the time required extensive walking, some of it up and down stairs. He lost weight steadily, and at the end of about a year began to relapse and had increasing difficulty in swallowing and sometimes in breathing. In October, 1944, about two and a half years after the onset of his illness and one and a half years after his thymectomy, he developed an acute respiratory infection. On re-entering the hospital he was cyanotic and in coma. He responded dramatically to 0.5 mg. of neostigmine methylsulphate given intravenously, but the response could not be maintained in spite of continued intravenous treatment and the use of the respirator. The patient died within 24 hours of entering the hospital.

Necropsy.—A small tumour attached to the pleural surface of the left diaphragm, showing the same basic structure as the tumour removed at operation, was discovered. It had infiltrated the diaphragm, and the muscle fibres in groups and individually were separated and surrounded by tumour tissue in which both epithelial and lymphocytic elements were present (Castleman and Norris, 1949, Case 6, two photographs).

Comment on Case 6

This patient presented many problems in regard to treatment. The explosive nature of the onset of symptoms at the age of 34, particularly with dysphagia, dysarthria, and weakness of chewing, made the prognosis grave. In spite of the immediate response to neostigmine taken by mouth, he relapsed within a year. Thymectomy was carried out with the patient only moderately well adjusted to neostigmine treatment and during a definite relapse in his symptoms. Subsequently it was realized that this was an unfavourable time for operation. The patient, moreover, was poorly maintained during the operative period, as the use of neostigmine by the intravenous route had not been discovered.

In spite of this hazard he not only survived the operation with the aid of artificial respiration but actually improved in the following year. His dosage of neostigmine was reduced from 16 tablets to 4 by the spring of 1944, the operation having occurred in April, 1943. A mistake was then made in allowing him to return to an occupation that was taxing his strength beyond justification. He walked as much as 10 miles a day, some of it up and down stairs. During this regime he steadily lost weight again and symptoms increased. It was necessary for him to raise his neostigmine intake to 15 tablets a day. A respiratory infection occurring at this time soon overwhelmed him, as his resistance, particularly to infections of the respiratory system, was low. However, he responded at this time to intravenous medication, but died of respiratory failure within 24 hours.

The most important finding at necropsy was the presence of a piece of thymic tissue growing as a tumour attached to the diaphragm. It was identical in structure with the thymic tissue removed 18 months before. It seems likely that this diaphragmatic lesion represents an accidental surgical transplant; it was not interpreted as a metastasis, as the primary tumour was not malignant. There were no other metastases. The diaphragmatic tumour was not destructively invasive. The opening of the left pleural sac allowed a fragment of mediastinal tumour to be introduced into the pleura and settle in a more dependent place, and this ectopic lesion caused the growth of large numbers of newer-formed capillaries similar to those seen in response to a mild chronic irritant (Castleman and Norris 1949, p. 51).

General Summary

Of the 36 patients subjected to thymectomy at the Massachusetts General Hospital since 1941, seven had thymomas and 29 showed various degrees of involution and the formation of germinal centres in the thymic tissue.

Three of the seven thymoma patients are living; one has survived six years. Two are greatly improved by the operation and their condition is classed as "excellent"; one is considered "fair."

All but four of the 29 patients in the non-neoplastic series have survived. Their results are classified as "excellent" (3); "good to excellent" (2); "good" (5); "fair to good" (2); "fair" (2); "poor to fair" (2); "poor" (2); "too soon to estimate" (7).

Thymectomy should never be an operation of "desperation." Patients should be adequately maintained on oral neostigmine before operation and their course should be steady.

Neostigmine may be given with advantage intravenously during thymectomy. Approximately 0.5 mg. of neostigmine methylsulphate, given intravenously, is equivalent in effect to 15 mg. of neostigmine bromide by mouth.

Thymomas in general are benign tumours, but they may expand locally. Implants at the time of operation are possible.

The significance of germinal centre formation in the thymus is not clear. The finding of a large number of germinal centres, however, is highly suggestive of myasthenia gravis.

The results of thymectomy in the last nine years justify the continuation of the operation in patients with myasthenia gravis. The operative mortality should be zero, or close to it, if patients are carefully selected and adequately maintained during the procedure.

ADDENDUM

Since this paper was prepared, the report by Keynes (1949) on his large experience with thymectomy in myasthenia gravis has been published. Although he has approached the subject from a slightly different direction, our essential conclusions are identical. Both papers point out the value of thymectomy as a form of treatment for the disease. He, operating on a considerable number of patients, regardless of duration of symptoms or the length of treatment with neostigmine, has provoked a significant remission in 65% of the cases so treated. In his experience, the shorter the history the better the results. I have chosen the more conservative approach, selecting, in most instances, patients long accustomed to the disease and the effects of neostigmine, as a fitting basis for evaluation of an operation radical in type and offering considerable hazard. Keynes has done much to lower the formerly high operative mortality, and it should now be well below 5%.

Only in details do we diverge. My older cases, contrary to Keynes's general assessment, have done fully as well as the cases of brief duration. I have deliberately avoided operating upon mild cases, or those fully maintained under oral medication. Good remissions may often be provoked by judicious treatment with neostigmine alone. Some, in my hands, are complete and of long duration; indeed, equal to those seen after thymectomy. I would consider less than half of 300 patients seen since 1935 as proper candidates for thymectomy, based on our present knowledge of the variable course of the disease. Patients with few symptoms, those responding in a balanced manner to neostigmine, no matter what the dose, most patients over 40 years of age, and particularly those having wide swings of remission and relapse, are not, as I view the problem to-day, best treated by thymectomy.

Secondly, I have not seen "myasthenic crises" characterized by excessive bronchial secretion. Patients may drown in their own secretions, but this, in my experience, is due to excessive or ill-considered use of neostigmine, not to the myasthenia gravis. Before the era of neostigmine, patients died a "dry death," except for pharyngeal accumulation due to dysphagia and inability to cough. Controlled neostigmine, intravenously, has largely removed this hazard during operation.

Finally, my patients do not "hold on" to neostigmine when the need for it is not present. The drug, a powerful stimulant of the parasympathetic system, is poorly tolerated by the non-myasthenic or the myasthenic in full remission. Tolerance to neostigmine, moreover, does not develop. Patients who have been taking the drug since 1935 still find it as effective to-day as when the first tablet or injection was given. That is why it is so valuable over the "long pull"; few other forms of medication can equal it in this respect.

Keynes's experience with 155 patients and his careful analysis of his results have set a pattern traditionally expected of British surgery. Others can only follow and report their results until such a time as general conclusions are justified. That time has not yet come. The key has been fitted to the lock and even partially turned, but the door is not open and what lies behind has not been even disclosed.

I acknowledge with thanks the co-operation received from Edward D. Churchill, Oliver Cope, and Richard H. Sweet, surgeons to the Massachusetts General Hospital; from Benjamin Castleman, pathologist, and my associate in the Myasthenia Gravis Clinic, Robert S. Schwab; as well as the continued support of Hoffmann-LaRoche, Inc., its president, medical director, and other officers.

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An article in the *Ministry of Labour Gazette* (December 29, 1949) describes the Ministry's efforts to recruit more nurses and midwives. The situation is said to be improving steadily, though there is still urgent need for more recruits to these professions. During the twelve months ended September 30, 1949, 42,000 interviews were given and 15,000 vacancies were filled. Of these, 3,000 were for trained nurses and midwives, 6,300 were for students, and 6,100 were for unqualified nursing staff. Since the war there has been a general improvement in the staffing of hospitals and the health services. During the year ended June 30, 1949, the number of nursing and midwifery staff employed in hospitals rose by about 15,000, and the number of occupied beds rose by 10,000. The number of students training to be nurses has greatly increased in recent years. In 1943 there were about 43,300 students training to be nurses or midwives: in 1949 the number was 57,800. The demand for nurses continues to increase, and there are still no fewer than 30,000 vacancies on the books of the nursing appointments offices.

PROGUANIL-RESISTANT FALCIPARUM MALARIA IN MALAYA

BY

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AND

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From the Institute for Medical Research, Federation of Malaya

Some of the earliest and still the most complete trials of proguanil ("paludrine") in falciparum malaria were made in 1946 by the Australian Medical Research Team directed by Fairley in Queensland (Fairley *et al.*, 1946). The results seemed decisive: strains of *Plasmodium falciparum* of South-West Pacific origin were sensitive to proguanil at important strategic points in their life history. The pre-erythrocytic forms were destroyed by a single minute dose appropriately timed to the infecting bites; and persons bitten many times were fully protected by 100 mg. given every day. The asexual blood forms were equally sensitive: acute infections were relieved by a single dose of 100 mg. and cured by a 10-day course of 300 mg. a day. Exposure of the gametocytes to therapeutic doses of proguanil arrested sporogony in the mosquito.

The wide range, the high potency, and the low toxicity of proguanil in falciparum malaria excited much interest, and as supplies became available clinical trials began in other parts of the world. The results in South-East Asia were generally good: the clinical response in acute attacks of malaria was perhaps slower than with quinine or mepacrine, but the suppressive activity of a weekly dose of 300 mg. or even 100 mg. was high. Elsewhere the results were equivocal—particularly in Africa and Southern Europe, where the tendency to a slow clinical response and the failure to cure seemed to demand reinforcement with a more active schizonticide, and where a daily dosage of 100 mg. was needed for efficient suppression (Bettini, 1948; Walls, 1948; Abbott, 1949; Covell *et al.*, 1949). Geographical strains, it seemed, showed differences in the proguanil sensitivity of the asexual blood forms.

Experimental evidence had shown in the meantime that proguanil sensitivity in malaria is not constant for a given species or strain, but tends to wane with prolonged exposure to the drug. Resistance could be produced experimentally in *P. gallinaceum*, a malaria parasite which infects the domestic chicken, *P. lophurae*, a parasite of ducks, and *P. cynomolgi* in monkeys; a resistance so marked in *P. gallinaceum* that the parasites became less sensitive to the proguanil than were the chicks themselves, and so persistent that it survived passage through the mosquito (Bishop and Birkett, 1947, 1948; Williamson *et al.*, 1947; Rollo *et al.*, 1948; Hawking and Perry, 1948). Still more significant was the experimental production of proguanil resistance in *P. falciparum* and *P. vivax* (Adams and Seaton, 1949; Seaton and Adams, 1949).

Proguanil Resistance in Naturally Acquired Falciparum Infections of Malayan Origin

Experimental trials of proguanil, sponsored by the Colonial Medical Research Committee, began in this institute early in 1947. They were planned to give information on the therapeutic and suppressive activity of the drug in acute malarial infection. The therapeutic tests were made on subjects with naturally acquired malaria admitted from neighbouring rubber estates and kampongs to the Tampin Malaria Branch of the institute.

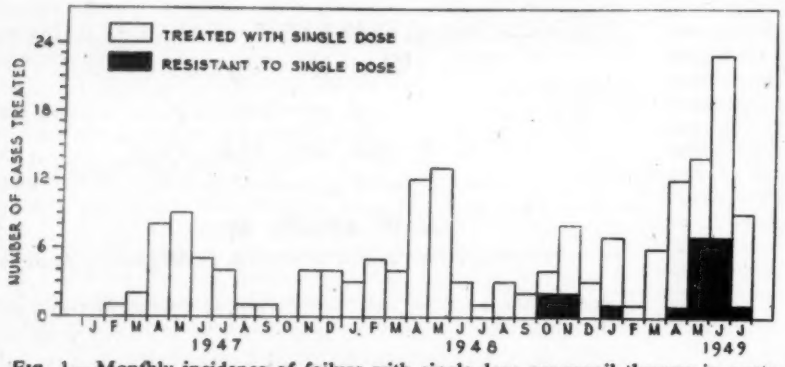

FIG. 1.—Monthly incidence of failure with single-dose proguanil therapy in acute falciparum infection.

TABLE I.—*Incidence of Failure with Single-dose Proguanil Therapy in Acute Falciparum Infection*

Single Dose	1947		1948		1949	
	Cases	Failures	Cases	Failures	Cases	Failures
100 mg.	6	0	20	0	—	—
250 mg.	—	—	15	4	45	10
300 mg.	33	0	26	0	27	7
Total	39	0	61	4	72	17

The Rising Incidence of Failure with Single-dose Proguanil Therapy.—The therapeutic dosage of proguanil covered a considerable range, but many subjects received only a single dose of 100 to 300 mg.—a deliberate test of minimal dosage designed to confirm, for Malayan strains, the high sensitivity to proguanil reported by Fairley *et al.* (1946) in New Guinea strains. During 1947 the clinical response to single-dose proguanil therapy in acute falciparum infection was good. There was, in fact, little to choose between a single proguanil dose of 100–300 mg. and a course of 300 mg. daily for five days: the fever and parasitaemia cleared at about the same rate. The first intimation of resistance, slight but definite, was in October, 1948, when a patient treated with a single dose of 250 mg. failed to respond; there have been 20 failures* since—one out of every four cases treated by this method (Table I and Fig. 1).

The mean daily parasitaemia in the cases treated in 1947, 1948, and 1949 is shown in Figs. 2 and 3. The mean parasite count on the first day in the 19 cases which, at the time when Fig. 3 was prepared, had failed to respond to the single proguanil dose was 18,000 per c.mm. of blood, with a range from 2,000 to 71,000 per c.mm.: the mean initial count in 76 cases treated between February, 1947, and October, 1948, when resistance first appeared, was 16,500 per c.mm., with a range of 100 to 80,000.

The Sudden Emergence of Failure with Standard Proguanil Therapy.—The apparent proguanil resistance in falciparum infections observed at the end of 1948 and in the early months of 1949 was a resistance to a single small dose. It was disappointing that this safe and easy method of clinical cure, so hopeful in 1947, was beginning to fail, but the efficiency of a standard proguanil course of 300 mg. daily for 7–10 days was not, as yet, seriously questioned. The clinical response was slow, but it seemed sure. In April, 1949, came our first failure with a standard therapeutic proguanil dosage; and in May and June, 1949, there were six more in each month. The clinical and parasitological records of five of these cases are given below. (The body weight of the adult Indian is about two-thirds that of the European adult: this difference should be taken into account in assessing the proguanil response.) The drugs were given by one of us. Thick blood films were examined morning and evening, and daily parasite counts were made by the Dreyer–Sinton fowl-cell technique. Daily examination of the urine for proguanil was made to check absorption of the drug.

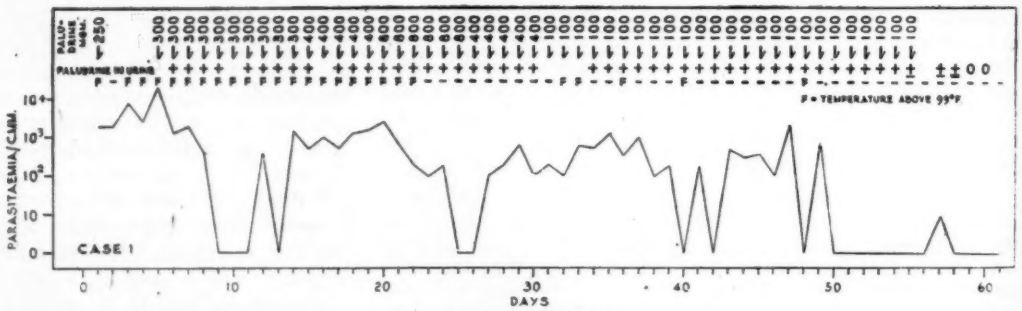

FIG. 4.—Chart of Case 1.

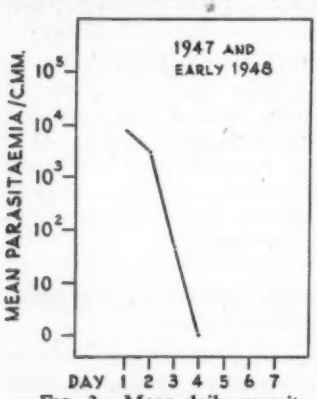

FIG. 2.—Mean daily parasitaemia in 26 cases of acute falciparum malaria receiving a single proguanil dose of 100 mg.

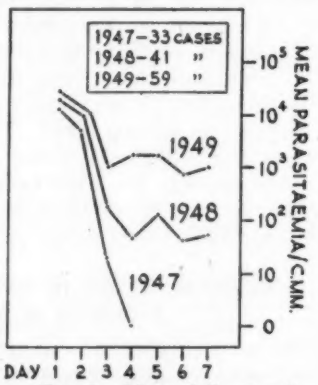

FIG. 3.—Mean daily parasitaemia in 133 cases of acute falciparum malaria receiving a single proguanil dose of 250 or 300 mg.

*"Failure" in this context means that there was still parasitaemia on the seventh day, or that therapeutic intervention was necessary before the seventh day.

Case Reports

Case 1.—An Indian woman aged 20 was admitted on June 1, 1949, to accompany her child. She developed fever with mild falciparum parasitaemia while in hospital, and was treated with a single dose of 250 mg. of proguanil without significant effect on the fever or parasitaemia. She was then given a therapeutic course of proguanil, which began on the fifth day at 300 mg. daily and rose to 800 mg. daily on the twentieth day. On the twenty-third day she complained of loss of appetite—an indication, perhaps, that her tolerance for proguanil was being strained. There was patent parasitaemia on most days throughout an observation period of 61 days, with continuous fever for 20 days. Her general condition throughout remained good. The total proguanil dosage over the period of 49 days' irregular parasitaemia was 14.3 g. (Fig. 4).

Case 2.—An Indian man aged 25 was treated in April, 1948, for an acute falciparum infection with a single dose of 100 mg.

of proguanil; parasitaemia and fever disappeared within three and a half days. The patient was readmitted on May 5, 1949, again with falciparum infection, and treated with a single proguanil dose of 250 mg., which failed to control the parasitaemia, though he became afebrile on the sixth day. The later history is shown in Fig. 5. During an observation period of 102 days he received five therapeutic courses of proguanil totalling 22.5 g.: he is on his sixth course at the time of writing and becoming somewhat restive. During the fifth course of 500 mg. daily for 14 days he complained of abdominal pain, and this dose may have been near his limit of tolerance.

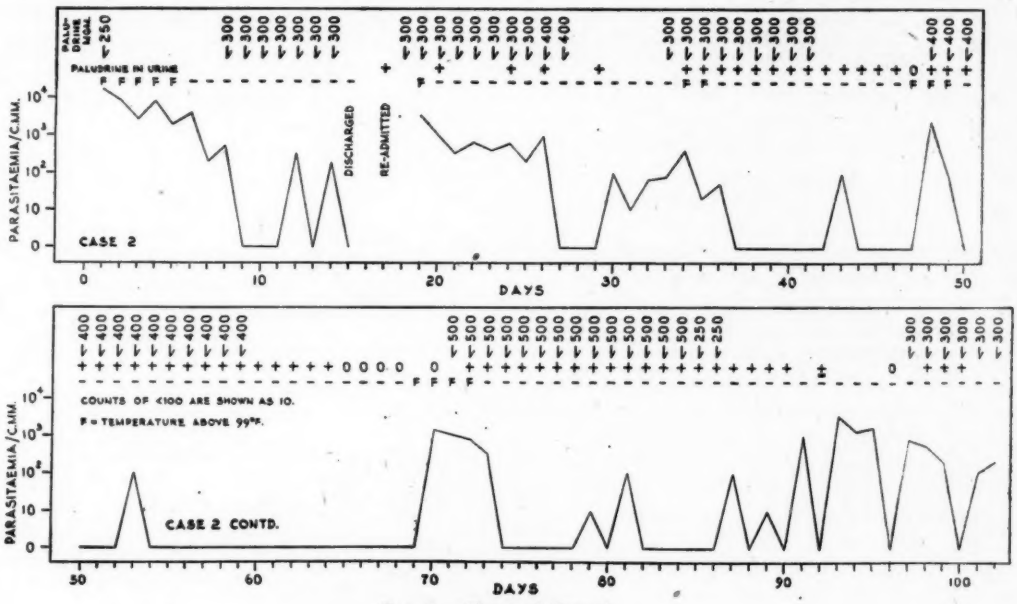

FIG. 5.—Chart of Case 2.

Case 3.—An Indian boy aged 12 was admitted on May 18, 1949, with an acute falciparum infection and treated with a single dose of 200 mg. of proguanil. For the next 10 days there was parasitaemia every other day, apparently from a single-brood infection. Thereafter four separate courses of proguanil of 200 or 300 mg. daily failed to clear the blood of parasites. He remained remarkably free from symptoms. The total proguanil dosage over 59 days' observation was 9.7 g. (Fig. 6).

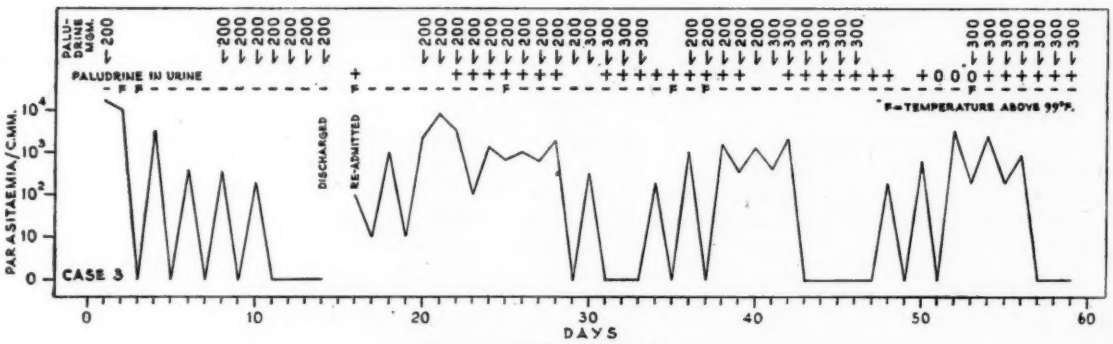

FIG. 6.—Chart of Case 3.

Case 4.—An Indian man aged 29 was admitted on June 8, 1949, with light falciparum parasitaemia, fever, and cough. No parasite count was made, as the infection seemed to be complicated and unsuitable for observation. He was given 300 mg. of proguanil daily for 10 days. The parasitaemia remained and an increased dosage was given. There was irregular parasitaemia through 28 days' observation and irregular fever for 22 days. The total proguanil dosage over 27 days was 7.6 g. (Fig. 7).

Case 5.—An Indian man aged 28 was admitted on June 3, 1949, with a fairly severe falciparum infection; the parasite count was 268,000 per c.mm. with a few segmenting forms. He stated that he had taken 200 mg. of proguanil daily for three days before he came to hospital; the urine gave a positive proguanil reaction. He was given 500 mg. of proguanil on the first day. The temperature on the second day had fallen to 98° F. (36.7° C.) and the parasitaemia to 25,000 per c.mm. From the second to the fifth day he received 250 mg. of proguanil daily. Fever and parasitaemia continued; the parasite count on the sixth day was 47,000 per c.mm. and the temperature 104° F. (40° C.); at this point there was therapeutic intervention with chloroquine. He was discharged on June 16. The course of two later proguanil-treated falciparum attacks, probably relapses, is shown in Fig. 8.

By way of contrast with Cases 1 to 5 is the dramatic response of a grave falciparum infection in the following case.

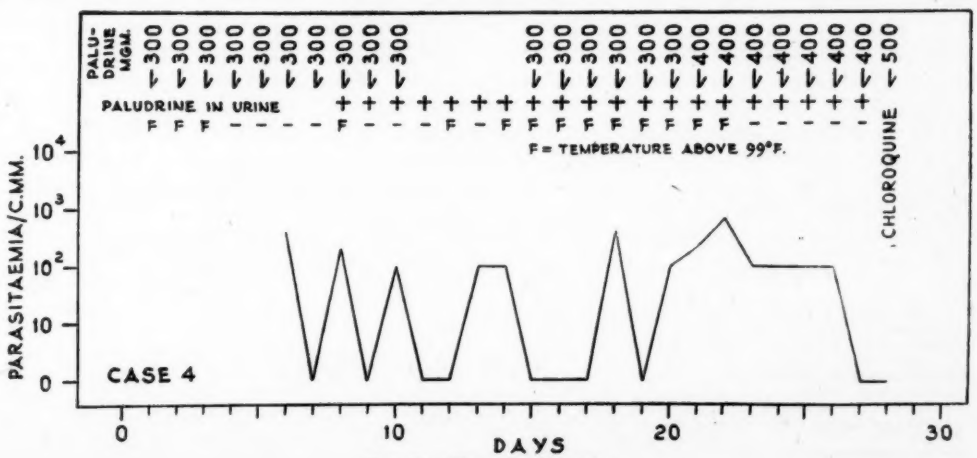

FIG. 7.—Chart of Case 4.

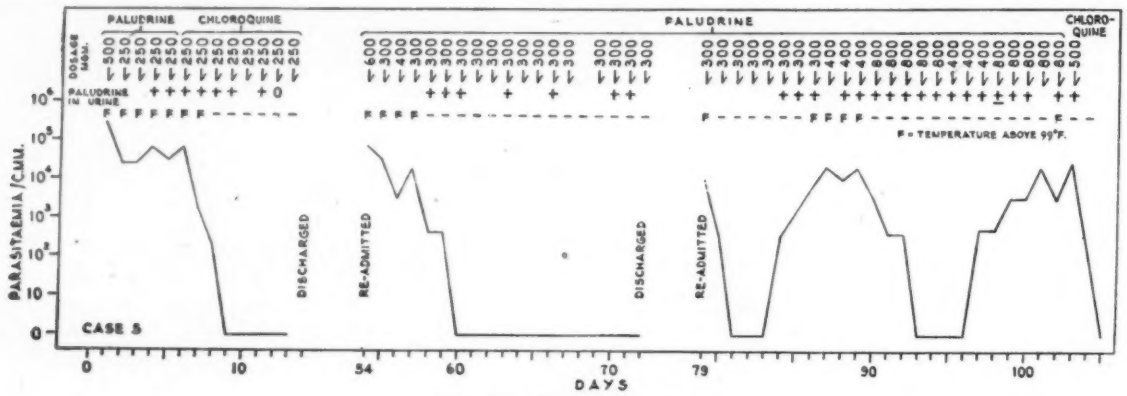

FIG. 8.—Chart of Case 5.

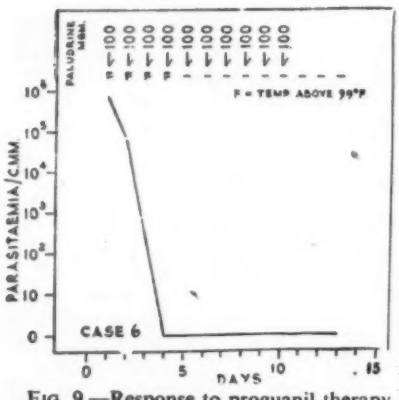

FIG. 9.—Response to proguanil therapy of an extremely heavy falciparum infection (Case 6).

Case 6.—A male Indian child aged 1 year had been ill for five days when admitted to hospital on June 18, 1949, with an extremely heavy falciparum infection. The parasite count was 710.000 per c.mm.; 20% of the red cells were infected. The child made an uninterrupted recovery on a proguanil dosage of 100 mg. daily. The rapid fall in parasitaemia is shown in Fig. 9.

This is the heaviest non-fatal infection recorded in the Malaria Division of this institute during experimental observations, over nearly twenty years, of about 2,500 acute falciparum infections.

Comment

Most of the evidence of proguanil resistance in malaria is experimental. Resistance appears when the parasites are exposed to sublethal doses of the drug and passed by blood inoculation from host to host, the increase in resistance being assessed by the relation of the least dose originally active to the least active dose after exposure to the drug. Some of this evidence is summarized in Table II.

Resistance to proguanil seems to be essentially—we cannot yet say exclusively—a resistance of the asexual blood forms, transmissible through the gametocyte and sporozoite. Whether in human malaria the sporogenic forms may become resistant is not known; nor is it known whether the pre-erythrocytic parasites in falciparum malaria are liable to lose their normal sensitivity. Rollo *et al.* (1948) discuss the mechanism of proguanil resistance. They show that resistance appears in *P. gallinaceum* when the full impact of treatment falls on large numbers of asexual blood forms, but not when the small numbers of parasites present in latent infections are exposed to the drug. A likely explanation, they suggest, is that resistant parasites occur spontaneously as rare mutants in a normally sensitive strain; and, as a result of selective survival of these resistant mutants when the parasites are exposed to the drug, a stable resistant strain emerges. The impetus towards proguanil resistance would thus be greater when overt malaria is treated and parasites are many than in suppressed malaria when parasites are few.

The rubber estates from which most of our patients were drawn have used proguanil for malaria suppression for many months, some for two years or more. Cases 1 to 5 all came from estates where there was mass suppression with proguanil at a dosage ranging from 100 mg. once a week to 200 mg. twice a week. Case 6 lived on an estate where proguanil was not used—a coincidence, perhaps, for the proportion of successes and failures with single-dose therapy since October, 1948, when resistance first appeared, has been about equal in proguanil-protected and non-protected areas. It is unfortunate that we cannot assess the complex interchange of human and anopheline populations in neighbouring protected and non-protected areas; but the significant fact, we suggest, is the widespread use of proguanil in the Tampin district for the past two years. This fact, we believe, is related to the emergence of the resistant strains of *P. falciparum* which we are beginning to meet in our Tampin centre.

The appearance of drug resistance after mass treatment is no new phenomenon. Van Hoof (1947) reports a marked increase in the incidence of arsenic-resistant trypanosome infections after methodical treatment with tryparsamide: resistant infections in the Leopoldville district of the Belgian Congo increased from 7% to more than 50% between 1938 and 1947. Will there be a like trend in the mass suppression of malaria with proguanil? Proguanil resistance has not yet become a serious embarrassment in Malaya. The drug is used with confidence and success by the medical services, the Army, and rubber companies; and foci where proguanil-resistant malaria has appeared are probably few and scattered. But will they remain scattered:

TABLE II.—*Experimental Proguanil Resistance in Malaria*

Author	Species	Host	Months to Acquire Degree of Resistance Indicated	Blood Passage at which Resistance Appeared	Degree of Resistance	Persisting Resistance After Mosquito Passage
Bishop and Birkett (1947, 1948)	*P. gallinaceum*	Chick	4½	23rd	+++	Yes
Williamson *et al.* (1947)	,, ,,	,,	—	—	×20–40	,,
Thompson *et al.* (1948)	*P. lophurae*	Duck	7	60th	×4	—
Hawking and Perry (1948)	*P. cynomolgi*	Monkey	14	Same animal	+++	—
Schmidt *et al* (1949)	,, ,,	,,		3rd	×2.000	Yes
Seaton and Lourie (1949)	*P. vivax*	Man	20	27th	×80	,,
Adams and Seaton (1949); Seaton and Adams (1949)	*P. falciparum*	,,	10	10th	+++	,,

+++ Dose resisted by parasite approaches limit of tolerance of host.

or will they spread, and will resistance increase, until the drug ceases to be a useful schizonticide ?

Proguanil resistance in malaria seems most likely to arise when the drug is used to treat acute infections without curing them, and when sporadic bursts of parasitaemia occur during haphazard suppression. We may discourage the emergence of resistant strains by raising the standards of treatment. Covell *et al.* (1949) have already proposed that proguanil therapy in acute falciparum malaria should be reinforced with mepacrine to raise the cure rate. This danger of proguanil resistance lends further support to their recommendation. Regular suppression is theoretically a safeguard against the spread of resistant strains, for proguanil not only arrests the development of *P. falciparum* in the mosquito (Fairley *et al.*, 1946 ; Mackerras and Ercole. 1948 ; Covell *et al.*, 1949) but also destroys the parasite in the human host at the pre-erythrocytic stage, which is not known to become resistant (Fairley *et al.*, 1946). But haphazard proguanil suppression is a potential menace, and we may have to consider whether, if we cannot use proguanil efficiently, we should use the drug at all for this purpose, or whether, if we cannot guarantee regular administration, it would be advantageous to alternate proguanil suppression with suppressive measures based on mepacrine or chloroquine, which are not known to produce resistant strains. These are problems which demand attention if proguanil is to retain the important role in the treatment and prevention of malaria which its outstanding merits have so deservedly won.

Summary

Acute falciparum infections treated in the Tampin district of the Federation of Malaya with a single dose of 100–300 mg. of proguanil do not respond as they did two years ago. There were no failures in 1947: now about one infection in every four fails to respond.

Until May, 1949, no falciparum infection treated by us had resisted full therapeutic doses of proguanil: seven infections observed between May and July, 1949, resisted proguanil doses as great as, or greater than, the standard therapeutic course. The daily parasitaemia in five of these infections is recorded.

Proguanil has been used widely but probably sporadically for the past two years throughout the Tampin district, whence the patients were drawn.

The implications of these observations are briefly discussed.

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HIRSCHSPRUNG'S DISEASE IN INFANCY

BY

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From the work of Bodian *et al.* (1949) emerges a clear picture of the problem of megacolon in childhood without obvious organic cause. In the condition which they denote true Hirschsprung's disease the colonic dilatation and hypertrophy end at some level above the rectum. Over the length of apparently normal bowel below the dilated portion ganglion cells of the myenteric plexus are absent, though they are present in normal numbers in the megacolon itself. By careful radiography, with oblique and lateral views, the functional obstruction can be demonstrated as a narrowing of the lower sigmoid which communicates with a small rectum. The above-named writers have applied with good results the two-stage operation, devised by Swenson and Bill (1948), of recto-sigmoidectomy with restoration of bowel continuity.

It is commonly accepted that symptoms may date from birth. Von Reus (1920) fully describes the clinical picture in the newborn. Ehrenpreis (1946) traces the development of megacolon from the neonatal period, and Zuelzer and Wilson (1948) give the clinical findings in a number of young infants in whom they discovered the histological lesion already referred to. The present report is concerned with symptoms and prognosis in the neonatal period and early infancy, and with other aspects of the problem as they bear on the management of the neonatal group. Seven cases have been followed up for eight months from a few days of birth, and the records of 23 others are available. Survivors in the latter group have been re-examined.

Clinical Features

Of seven neonates (4 male and 3 female), three were observed from birth in a maternity department, three were seen on the third day, and one was seen on the eighteenth day. Vomiting was the first symptom—in four babies within 24 hours of the first feed. Its frequency increased and the vomits soon contained bile. Delay in the passage of meconium and distension were then noted. Six days was the longest initial period of complete constipation. Two of the infants passed meconium in the first 24 hours and thereafter in small amounts for three days. As the distension increased, small-intestine ladder patterning was seen twice and visible gastric peristalsis once. More common was the finding of one or more greatly distended loops of gut standing out on the abdominal wall, along which infrequent peristaltic waves could be traced. After digital examination or an enema a great deal of flatus and meconium was passed, vomiting settled, and further meconium stools and then faeces were passed normally for a few days. The baby was sent home with its mother after the usual puerperium or was promptly discharged when it had been admitted from the district.

Readmission to hospital followed in a few days with a relapse of the vomiting, distension, and constipation. Three of the babies were now seriously underweight and somewhat dehydrated, and a fourth was desperately ill with faecal vomiting. In this baby (Case 5) the relapsed state persisted up to death at 3 weeks, on the evening of a

transverse colostomy that had been deferred until there was clearly no chance of spontaneous improvement. Another baby that died at the age of 4 months (Case 4) became chronically distended from this time, there being increasing inadequacy of response to enemas and purgatives. At necropsy his large gut was dilated and hypertrophied to the pelvic colon, and ganglion cells were absent from this region to the anus. The other five cases again responded to local measures; in one, however, they were thereafter continuously necessary, whereas four began a long remission with spontaneous stools daily or every other day, no obvious distension, and good weight-gains—in fact, behaving in all respects like normal infants. By the age of six months, however, all but one were again constipated and pot-bellied, with bulky faecal masses in the abdomen, and all of them had developed a radiographically demonstrable megacolon.

Certain inconstant findings may be mentioned. In two cases, later most severe, passage of the first meconium followed by characteristic amelioration took place without local intervention (Cases 3 and 5). On two occasions during the first week five or six small watery stools were passed daily. At the first rectal examination a "tight anus" was recorded in three cases. In two patients initial symptoms were confined to increasing distension and constipation without serious vomiting.

Past Experience

Notes are available of 23 patients, aged a few days to 2 months, presenting the same group of symptoms and physical findings. The younger the baby the worse was its physical condition. Remission of symptoms after the first few days was a constant feature. In a few the delayed meconium was passed spontaneously, but the majority underwent some form of rectal intervention. On three occasions loose or watery stools are noted within two to three days of the first meconium.

Of these patients five are now alive, all with the typical clinical and radiological features of Hirschsprung's disease, and one has not been traced. One died suddenly at the age of 4 with dilatation and hypertrophy of the colon as far as the lower sigmoid, revealed at necropsy; no other cause of death was found. Thirteen died in hospital within 24 hours to three weeks of admission, and four at home within a few weeks of discharge. Ages at death were in one case 6 days, in three 8 to 10 days, in four 1 month, and in five 1 to 3 months.

In keeping with the clinical account of these cases are the findings recorded at operation or necropsy. Dilatation of the colon was noted in 13. Narrowing began at the splenic flexure in three aged 8 to 10 days; at the recto-sigmoid junction in four aged 1 to 2 months; over the last inch or two of sigmoid in two aged 1 and 3 months; and in three, where the description is incomplete, at some level between pelvic colon and recto-sigmoid junction. The earliest age at which hypertrophy is mentioned is 1 month. The pancreas was not examined, but no abnormal consistency of the meconium is noted. In three cases for which sections from the narrow part of the colon or of the rectum are available no myenteric ganglion cells can be identified.

The cause of death could not be ascertained in all cases. One death occurred shortly after an injection of carbachol, in two death was sudden and for no obvious cause, and one patient aged 6 days had a small subdural collection of blood. Four became chronically distended despite frequent enemata; feeding was difficult, and they died from malnutrition after several weeks. In seven cases it seems clear that attention was attracted chiefly to the vomiting and distension. Five of these were operated on (four laparotomies and one colostomy), and all died within 48 hours.

Two points of negative interest may be mentioned, covering both groups of babies—30 cases in all (24 male, 6 female). No evidence was obtained of familial incidence: 10 of the subjects were first-born children and six were from families of three or more. Nor was there any genito-urinary disturbance.

Diagnosis

When cases were seen from birth the quick relief from release of the first meconium suggested the cause of obstruction to be low in the large bowel. The relapse which soon followed, as described by Ehrenpreis, suggested the diagnosis. Once meconium had been passed and later faeces, other causes of intestinal obstruction of the newborn, notably meconium ileus, organic atresias, and malrotation of the bowel, were ruled out. The small, frequent stools in the first week in two cases raised doubts whether an enteritis or parenteral infection might be present. Proof of the true nature of the condition was established by radiology.

The cases were examined by barium meal or enema. The pathological segment varied in length and appearance. A string-like narrowing was demonstrated once in all the subjects, though only a relative diminution in calibre over the same part of the gut might be seen in other films. All evidence of the lesion was readily obscured by an excess of barium (see Figs. 3 and 4). Above the narrow segment well-marked dilatation of the entire colon could be demonstrated in at least one view, and again appearances varied considerably over short intervals of time (Case 1). In one instance the plain film was considered diagnostic after the passage of faecal stools had excluded atresia low in the intestine. In another it showed extreme distension of the transverse colon by gas, but other plain films did not permit of clear discrimination between shadows in the large and those in the small gut.

"*Anal Spasm.*"—A distinct sense of constriction of the examining finger was felt in three of the current series and is mentioned in the notes of five of the earlier group. The same finding is described by Von Reus and Bodian *et al.* It was of little help in diagnosis, and in some cases led to a misunderstanding of the condition, which, on an analogy with the notion of anal spasm as a cause of the simple constipation of breast-fed babies (McNeil, 1942), was at first held to be benign and temporary. It was not to be

FIG. 1.—Case 1, aged 15 days. Twenty four hours after barium by mouth.

mistaken for the firm unyielding ring of the rare congenital anal stenosis (Ladd and Gross, 1941).

The following examples indicate the changing clinical picture and different grades of severity

FIG. 2.—Case 1, aged 5 months. Barium enema after evacuation.

Case Reports

Case 1.—Marie B., whose birth weight was 4 lb. 14 oz. (2.21 kg.), passed meconium on the first day. There were then three to five vomits daily, some bilious. She passed no stool on the fourth and fifth days, became somewhat distended, and then passed several small greenish stools in 36 hours. Vomiting stopped on the sixth day and she went home on the ninth with her mother, her weight then being 4 lb. 12 oz. (2.15 kg.). She was admitted to hospital on the fourteenth day because of two days' vomiting and constipation; weight 4 lb. 11 oz. (2.12 kg.). There was pronounced wasting, and moderate abdominal distension with small-intestine ladder patterning. On rectal examination a tight sphincter was noted. A barium enema revealed a colon of normal diameter. Twenty-four hours after barium by mouth considerable dilatation throughout was demonstrated (Fig. 1). With enemata distension subsided for a few days and there was no more vomiting. At 5 months she was a well-nourished baby, passing a soft stool daily or sometimes every other day. Fig. 2 shows the later stage, where slight dilatation of the lower part of the large gut ends sharply in the upper third of the rectum. Abrupt narrowing at the same site can be identified in the earlier film, though the calibre of the bowel just above it is within normal limits. At 8 months a plain film showed a dilated sigmoid loop, and bowel movements were still normal.

FIG. 3.—Case 2, aged 19 days. Twenty-four hours after barium by mouth.

FIG. 4.—Case 2, aged 3 months. Twenty-four hours after barium by mouth.

Case 2.—Carol B., whose birth weight was 6 lb. 4 oz. (2.83 kg.), passed meconium on the first day; the bowels then became erratic, and on the fourteenth day she started to vomit. When seen first on the eighteenth day she was very wasted—weight 5 lb. 12 oz. (2.61 kg.)—with a distended abdomen upon which coils of bowel could be faintly discerned. The anus was tight. Twenty-four hours after barium by mouth there was dilatation, chiefly of the descending colon, and a few hours later the sigmoid was considerably dilated (Fig. 3), narrowing in its lower portion to join a narrow rectum. She quickly improved with enemata and remained well. Barium by mouth at 3 months showed the size of the colon to be within normal limits (Fig. 4). At 6 months she became constipated again for the first time since the early weeks; a faecal mass was felt in the abdomen and at a finger's length from the anus, and a barium enema showed that the sigmoid was considerably enlarged.

Case 3.—John A. weighed 8 lb. (3.63 kg.) at birth. When first seen at 2 days the complaint was of increasing abdominal distension and bilious vomiting. The bowels had not moved since birth, but before any examination of the anus was made normal meconium was passed spontaneously. Regular stools and cessation of vomiting followed. A barium enema at the age of 4 days showed a dilated colon and a long narrow segment in the lower sigmoid (Fig. 5). He remained well for a week but then relapsed, and soon the colon became permanently enlarged to the hepatic flexure and palpable through the abdominal wall, with constipation for which painstaking treatment was needed. Good nutrition was maintained, but he died suddenly at the age of 9 months during an attack of bronchitis.

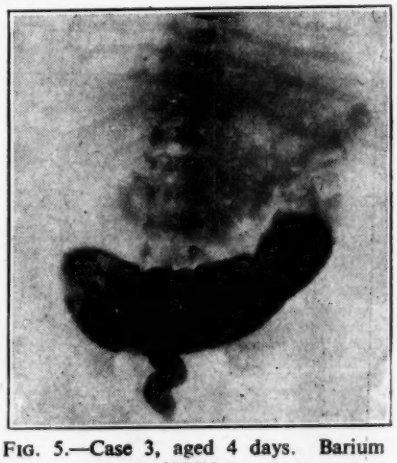

FIG. 5.—Case 3, aged 4 days. Barium enema.

Case 4.—Robert B., who weighed 10 lb. (4.54 kg.) at birth. was distended, vomited bile, and was constipated until the third day, when rectal examination was followed by passage of first meconium and much flatus. After a week's remission the distension and constipation returned, never responding to prolonged treatment in hospital with enemata and parasympathomimetic drugs. He died at 4 months. Fig. 6 shows a barium enema at 2 weeks, and Fig. 7 the necropsy specimen. Ganglion cells were absent from the pelvic colon to the anus, a length of 20 cm.

Case 5.—Patricia A. weighed 8 lb. (3.63 kg.) at birth. Events were similar to those in Case 4 until the third day, when vomiting became faecal and a plain radiograph showed fluid levels in the small intestine, gaseous distension of the transverse colon, and some gas in the rectum. A few small loose stools were passed after the first meconium, and constipation and severe vomiting recurred after a week's partial subsidence of the

distension. At sigmoidoscopy the bowel was seen to enlarge 10 cm. from the anus and a transverse colostomy was performed on the twenty-fourth day of life, though a barium enema had shown narrowing to the splenic flexure, beyond which no barium would pass. The infant died next day. At necropsy the colon was dilated and hypertrophied for 20 cm. to the splenic flexure and of normal dimensions for 17 cm. from there to the anus, with an absence of ganglion cells. Death was due to an intense ulcerative colitis with perforation, peritonitis, and terminal septicaemia.

Radiographic findings have been given in some detail, since they differ from those of other writers. In Ehrenpreis's series the colonic diameter was no greater than the normal upper limit found among 100 controls, evidence which he used to refute the theory of congenital overgrowth. Zuelzer and Wilson laid emphasis on the signs of small-intestine obstruction. Of the five of their cases examined radiologically the colon was dilated in two and normal in three; in another case a colon of pencil thickness throughout was later found at operation to be structurally normal save for the absence of ganglion cells. In the present series neonatal colonic dilatation could always be demonstrated if sought with enough care. The variability of this sign is evident. As it depends on the accumulation of enough gas it is more likely to be found during a meal and follow-through than during examination with an enema, preparation for which may include washing out the lower bowel. If symptoms have already subsided radiological findings may well be normal and a follow-up be necessary to show the nature of the case.

FIG. 6.—Case 4, aged 14 days. Barium enema.

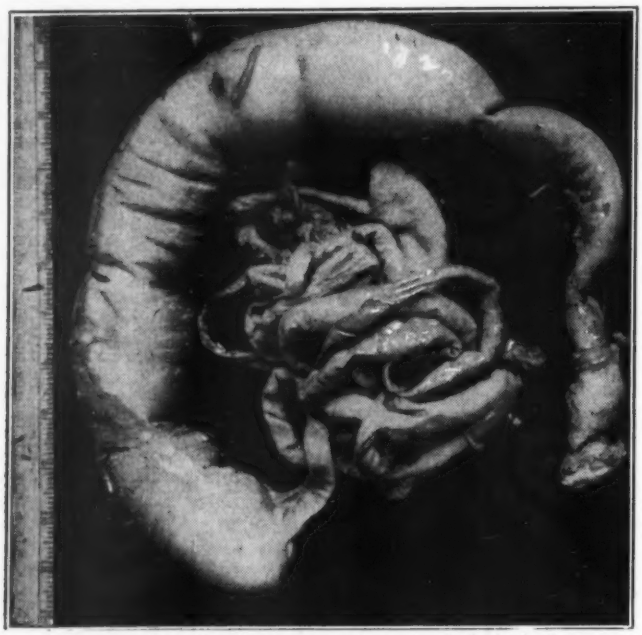

FIG. 7.—Case 4. Necropsy specimen (scale in inches).

Barium by mouth, with the risk of inspissation behind a possible obstruction, is not in general to be recommended in the newborn. It was not given to patients seriously ill, and in later cases a combination of plain film and barium enema without preparatory wash-out has been thought adequate.

Hirschsprung's Disease in Childhood

The disease is uncommon in older children even in the practice of large clinics (cf. Hurst, 1934). Seven patients aged 2 to 10 years have been available for examination, all with the radiographic finding of a small rectum joined to a grossly dilated sigmoid by a narrow segment a few centimetres in length. Six had had vomiting in the first few days of life, generally bilious and once faecal, which settled after manipulation had allowed passage of the first meconium; the first neonatal week of the seventh had been marked by progressive distension and constipation. There had been further symptoms during the next few weeks, three of the patients having been admitted to hospital at the age of 1 to 5 weeks, and one at 4 months, with a recurrence of the same complaints. Their records show considerable loss of weight. Only from about this stage is it possible to relate the severity of early clinical features to present status.

The two with mildest symptoms, now aged 5 and 10, never became much distended thereafter. Both have been liable, at long intervals, to periods of constipation and some abdominal discomfort, lasting many days and corrected with a few wash-outs. Two others, now aged 3 years, are severely distended despite excellent care, comprising wash-outs three or four times a week from the early months and a variety of purgatives; and one who has a daily stool with regular purgatives and less-frequent wash-outs is none the less much distended. Two more aged 2 years have had large faecal masses in the sigmoid for as long as a year. Vomiting seems to have been less frequent in those cases in which regular enemata have prevented large faecal accumulations. Diarrhoea has not been a feature, though a few loose stools have sometimes occurred after a long spell of constipation. The children's heights are within normal limits, but those over the toddler age are thin and somewhat flabby.

Incidence.—In 1947–8 six cases occurred among 7,000 live births in two maternity units. Another nine examples of the condition during the first few weeks of life were referred to the University Department of Child Health by the doctors of Newcastle-upon-Tyne and the surrounding districts, and admitted to hospital. Though the latter figure cannot be assessed in any exact terms an appreciable incidence of the disease in babies can be inferred. In the same period a quite different state of affairs obtained among those over the age of 1 year. Out of 10,000 children aged 1 to 15 at their first attendance as out-patients or for admission none had Hirschsprung's disease, though among a number of constipated and distended children submitted to further investigation seven had a megacolon, disclosed by radiography.

Dyschezia

The finding just referred to serves to introduce the other kind of megacolon without organic cause, termed "idiopathic" by Bodian *et al.* They give a full account of the clinical and radiological features, with emphasis on the large rectum. The condition carries a good prognosis for

life and did not trouble earlier writers (Finney, 1908; Hawkins, 1907), who agreed that with few exceptions the morbid findings in the megacolon disease were a dilated and hypertrophied colon ending in a funnel-shaped narrowing at the lower sigmoid and a small rectum. Its recognition by means of radiography in constipated subjects has obscured the true picture of Hirschsprung's disease, and has led to conflicting reports about prognosis and the benefit of widely different forms of treatment.

Seventeen such patients have been observed, aged 3 to 10 at their first attendance, at which time all had large faecal collections in the rectum and a radiologically disclosed megacolon, and were re-examined after one to six years. Distension in some of these patients was as pronounced as in the patient with Hirschsprung's disease of comparable age, and in one the ribs were slightly flared. A minority were thin and malnourished. All had had regular bowel movements in infancy. Onset of symptoms was difficult to place accurately. In five it was related to measles or whooping-cough. Constipation in one was said to have begun at the age of 6 months, but on close inquiry this seemed doubtful. The majority started in the second or third year, some a good deal later.

Seven who have now been without treatment for a year or more are quite well and physical examination is normal. Two of them possess old films which show that a moderately dilated colon has returned to its normal size. Of these two patients one had been admitted to hospital three times in his early years for removal of a faecal impaction from the rectum, followed by a course of enemas and purgatives; in the other, treatment was confined to regular purgation and training. Six still take purgatives to secure a regular bulky stool, but in other respects are normal children. Four of the cases are unsatisfactory, with some intermittent distension, vaguely palpable bowel in the mid-abdomen, and recurring collections in the rectum despite courses of enemata. They have the longest histories, and are those whose treatment has been least regularly carried out.

It is perhaps permissible within the limits of Hurst's (1919) notion of dyschezia to believe the cause of this type of colonic enlargement to lie in a chronically distended and unresponsive rectum, itself the result of simple neglect of bowel habits. Though in his later paper Hurst (1934) does not consider it, Finney recognized the possibility in the old or insane, and the following evidence may be cited in support. Symptoms often date from the toddler age or an illness—common times for constipation. The condition is curable, and a dilated colon may return to normal size. Finally, all degrees of severity of the dilatation and its duration have been observed. If the entire history is of only a few months a child presenting with considerable abdominal distension, generally colic and vomiting too, may show a normal or slightly enlarged colon on receiving a barium enema after removal of the impacted faeces. At the other extreme is the case with an enlarged colon of several years' standing terminating in a rectum that completely fills the pelvis and rises well into the lower abdomen. In such a patient prolonged treatment faithfully carried out may fail to bring cure within sight. The average child with this comp'aint responds well to the regime of enemata, purgatives, and training recommended by Stephens (1949), provided a careful watch is kept for the overloaded rectum that heralds an arrest in the return to normality.

Does the syndrome of constipation, distension, and vomiting in the neonatal period relieved by the passage of meconium with or without local intervention always mean Hirschsprung's disease? In the present series initial symptoms were not always severe, and had the babies not been the subject of regular scrutiny the true course of events might not have been discovered. The following record, however, suggests that this neonatal picture is not the invariable precursor of Hirschsprung's disease.

Maureen McM., whose birth weight was 6 lb. 8 oz. (2.95 kg.), vomited continually from birth. At 6 days she had not passed meconium and was distended, with intestinal patterning. Much flatus and meconium followed the passage of a catheter through a normal anus, and the bowels opened daily thereafter. At the age of 9 she is a well-developed child with a normal colon to contrast enema.

It is perhaps noteworthy that symptoms were confined to a single incident with no relapse. Soldin (1913) and Frick (1933) describe similar cases, and believe that a plug of meconium was responsible for the obstruction; but only Gillespie and Rogers (1939) give an adequate follow-up, their patient being well at the age of 5, though not checked by *x*-ray examination (Gillespie, 1949, personal communication).

The opposite proposition, that Hirschsprung's disease is always preceded by a neonatal episode, is of less practical importance, though a clear account of such an incident will help in the differential diagnosis of an older child with megacolon. The 30 infants described above are too select a group to bear on this point, but it is of interest to note that in all the seven older children there was certain evidence of neonatal disturbance.

Discussion

The main purpose of this report has been to present evidence that the disease is not as uncommon in young babies as might be expected from its incidence later in childhood, and that it can be diagnosed with fair certainty at the time of the earliest symptoms. A high mortality has been indicated and some attempt made to describe the great variability of its course in infancy and later. As a criterion of severity the clinical picture in the neonatal period may be very misleading, an alarming state of intestinal obstruction being compatible with a mild later course. Severe cases in the current series all had a long segment of affected bowel as judged by radiology, as in Cases 3, 4, and 5; but the segment was comparatively short at necropsy in several fatal cases in the earlier group in which the condition was not so well recognized.

The lack of agreement on the best management of megacolon, and the inconstant results of a number of surgical procedures tried in the last 30 years, are the easier to understand now that the dyschezia group with its good prognosis has been separated and the cause of Hirschsprung's disease demonstrated. Though a nosological definition might now have to include as Hirschsprung's disease such cases as that described by Zuelzer and Wilson in which the anatomical state is a microcolon, these are rare, and the eponym is best confined to its old sense of megacolon ending at some level above the rectum. For such cases the operation used by Bodian *et al.* is likely to be employed on an increasing scale. Its extension to infancy, however, is subject to two reservations. First, surgery has little place at the time of the earliest symptoms, no matter how bad they may seem, as longer observation is needed to decide the severity of a case. Secondly, of patients who deteriorate in the following weeks or months there will be some in whom the affected segment is too long to allow of excision and approximation of the upper portion to the anus. Though the last word must rest with those responsible for surgical technique, Cases 4 and 5 are

possible examples in which the preliminary colostomy might have to be left permanently. The natural course of events was surely a better solution. On the other hand, Case 3 could have been saved had a colostomy been performed about the age of 6 months, when obstinate symptoms were well established, and it is likely that the bowel could have been adequately mobilized for the next stage.

Since this paper was submitted for publication the successful performance of a one-stage operation in three cases, the youngest aged 3 months, has been reported by Swenson, Neuhauser, and Pickett (1949). Radical measures at such an early age before dilatation and hypertrophy have become established obviate the need for the temporary colostomy to allow the bowel to resume its normal size.

Summary

A very characteristic pattern has been observed in Hirschsprung's disease in the newborn and in early infancy.

The length of affected bowel and the severity of the consequent disease varied greatly.

Mortality has been high—the more so when diagnosis was not complete.

Emphasis is laid on the long latent period that may follow the neonatal incident in milder cases.

Evidence that dyschezia is the cause of a type of megacolon different in clinical and radiological features and benign in its course is discussed.

Of a small group of cases of Hirschsprung's disease surviving infancy none are symptom-free.

Certain conclusions are drawn regarding the part of surgery in management of the disease in young infants.

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Cholera-control teams sent out by the World Health Organization will start field work in 1950 in the Cauvery Delta region of Madras Province, in India, and the Ganges Delta of East Bengal, Pakistan. It has been noted that areas of endemic cholera occur most frequently in river deltas with a high density of population and high humidity and where the water supply is abundant, uncontrolled, and marked by a high organic content and salinity. Both the Cauvery and Ganges Deltas conform to this pattern. Problems recommended for further investigation include the possibility that cholera infection is carried by fish, the part played in dissemination of the disease by subclinical cases, contacts, and convalescents, and the immunity of the population in endemic areas.

THE FUTURE OF OCCUPATIONAL HEALTH*

BY

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On June 1, 1949, the Prime Minister announced in the House of Commons that the Government had recently been considering the relationship between the National Health Service and the various health services at present provided in industry which make a call on medical man-power. "In order to secure that the country's limited medical resources are used to the best advantage and with due regard to economy," said Mr. Attlee, "it is essential that these services should be organized in such a way as to ensure that there is no duplication or misdirection of effort. I have therefore appointed to advise the Government on this matter a committee whose members are drawn from the industrial field, including both the management and the trade union sides, and various branches of the medical profession" (*Hansard*, 1949). The Prime Minister suggested to all branches of industry that in view of this inquiry substantial further development of industrial health services should so far as is possible be postponed until the committee's recommendations were available. The committee's terms of reference are :

"To examine the relationship (including any possibility of overlapping) between the preventive and curative health services provided for the population at large and the industrial health services which make a call on medical man-power (doctors, nurses, and auxiliary medical personnel); to consider what measures should be taken by the Government and the other parties concerned to ensure that such medical man-power is used to the best advantage; and to make recommendations."

Replying to questions on his statement, Mr. Attlee hoped that the committee would not take very long to complete its task. It would take into consideration all industrial medical services, but would not include any survey of the medical services of the Ministry of Pensions and the Ministry of Education; if this were done it would delay decision. He was well aware of the need to preserve industrial health services, but there must be no overlapping

It is significant that the Prime Minister himself has taken action on a health matter, thus indicating that the Cabinet cannot agree at this stage which Government department should be the central authority responsible for occupational health. Further, the Prime Minister's emphasis on "overlapping" and "using medical man-power to the best advantage" may raise the controversy of the relative importance of preventive and curative medicine in any national health programme, and thus obscure the issue so far as the committee is concerned.

Some Views on Expansion

During recent years a number of differing views have been expressed about the future organization of occupational health. The Association of Scientific Workers (1943) submitted a memorandum based on collected information and opinions to the Trades Union Congress. In it was adverse criticism of methods of selection and payment of industrial medical officers. These doctors should be paid and appointed by, and be subject to, a wider authority than the individual firm in which they

*A paper read in the Section of Occupational Health at the Annual Meeting of the British Medical Association, Harrogate, 1949.

work. If a national health service was created the industrial medical service should become an integral part of it; central authority would be vested in the Ministry of Health, administered regionally, and closely linked with the family-doctor service. Only thus could there be co-ordination and integration of all health services. The adequate development of schemes for resettlement of disabled workers, for instance, would be inconceivable with the patchwork provision of doctors and other health personnel in industry.

The Trades Union Congress (1944) in a memorandum presented to the Royal College of Physicians of London also emphasized the view that doctors should be appointed by a Government organization rather than by employers. The workers should have a say in appointments. Industrial health services should be interwoven and closely co-ordinated with the National Health Service and could become the responsibility of the Ministry of Health.

The Association of Industrial Medical Officers (1944) pointed out that probably not more than 25% of employed persons were covered in any way by a medical service at the place of work. Even then the service provided was not always good or efficient. Training facilities for doctors and nurses were inadequate. The suggestion that the industrial medical officer may be professionally subservient to the employer who pays him was not a valid criticism. Of more importance was the point that the financial position of the employer or his personal inclination might affect the quality of the service or lead to its termination without regard to the needs of the worker. The recommendation of this Association at that time was that a committee of inquiry should be set up by the Government to consider the matter in all its aspects.

The Royal College of Physicians of London (1945) issued a comprehensive report on industrial medicine which included specific recommendations for reform. Health services at the place of work should be available to all employed persons, not only factory workers. The service should be planned boldly as an integral part of the National Health Service and without much regard for traditional arrangements. It should be operated in the main by part-time medical officers recruited from general practitioners, advised by consultants in occupational health. Large firms and groups of firms would still need whole-time industrial medical officers. There was an urgent need for first-class postgraduate educational facilities in this field. The scheme should come under the Ministry of Health, but certain functions might be delegated to the Ministry of Labour and other bodies. At the periphery some administrative authority would have to ensure that the general principles laid down centrally would be followed. Medical supervision at places of work would have to be satisfactory, and the authority, through its medical staff, would have to integrate its work with that of general practitioners and hospital services, and units concerned with teaching and research. The College holds that the health of the individual at home and at work cannot rationally be separated; it would be impossible to secure efficient rehabilitation unless there was the closest link between the industrial and the national health services; sound development of the National Health Service requires direct access, on the part of those doctors operating it, to knowledge and experience of occupational health problems.

The Association of Certifying Factory Surgeons (1947) feels that the industrial medical service should be kept apart from the National Health Service. Every factory and workshop in the country should have medical advice available to it. A whole-time service alone would tend to become narrow in outlook and could not be considered satisfactory; there should be room, therefore, for part-time medical men. Although the industrial medical service should be linked with general medical services more closely, its organization would be best carried out centrally by the Inspectorate of Factories. Selection of medical men to posts in industry should not be the responsibility of the employer. The doctor should be selected by a committee consisting of the Medical Inspector of Factories and the employer, and finally approved by the Chief Inspector of Factories. Payment of salary should be divided between the State and industry. The work of the Examining Surgeon (now, since the Factories Act of 1948, described as the Appointed Factory Doctor) should be extended by statute to include the re-examination of young persons up to the age of 20 or 25 and the examination of workers over 60 years of age. If necessary the amount of time given to general practice by this doctor should be cut down.

Views of the British Medical Association

The most recent views on the question of expansion are those of the British Medical Association (1949). In a broad and general way the Association discusses the development of a comprehensive occupational health service, making, at this stage, only three positive suggestions: (*a*) that the Ministry of Health should be the central authority appointed to supervise the service; (*b*) that expansion should take place only after a survey of the situation; and (*c*) that experiments in type of service and administrative procedure should be carried out. Occupational health is defined as being concerned with the study of individuals in relation to the physical and psychological demands of their occupations, and with the study of work and the work environment in relation to their effects on health. Occupational health is now held to include the subjects of industrial or occupational medicine, industrial surgery, industrial physiology, toxicology in relation to industrial hazards, industrial rehabilitation and resettlement, industrial or occupational psychology, and industrial hygiene and engineering. The Association makes it clear, however, that non-medical experts play an active part in the promotion of occupational health. Occupational health services should no longer be confined, as they largely have been in the past, to the practice of medicine in factories. There is much activity now in non-manufacturing undertakings such as the transport and shipping industries, in shops and hotels, and among clerical workers. Including the coal-mining industry, these occupational groups do not come within the immediate scope of the Factories Acts. A recent report, Health, Welfare, and Safety in Non-industrial Employment (1949), provides ample evidence of the need for additional development outside the purely industrial field.

In advocating that the Ministry of Health would be the most appropriate central co-ordinating body to supervise the development of this service the Association points out that only thus could integration with the National Health Service become a practical possibility. Close links would be created with the hospital and consultant services, with the general-practitioner service, and with the public health service administered by the local health authority. Before there is any expansion or integration of the existing schemes the Ministry of Health should arrange surveys to determine the further needs of different areas and the particular character of the service required. Even after such surveys have been conducted experiments in methods of providing services will be necessary before plans for a comprehensive service can be made.

Purpose of an Occupational Health Service

It seems reasonable to suggest that close examination of the purpose of an occupational health service should be made in any discussion concerned with its expansion. The broad purpose of a service is the supervision of the health of the individual as it may be affected by his employment. This supervision has necessarily to be provided at the place of work. It includes supervision of the working environment from the point of view of health; assessment of the fitness of the individual for different forms of employment, and supervision of the individual—for example, the young person—within his employment; rehabilitation and resettlement of disabled employees; and the provision of emergency treatment for cases of injury or illness occurring at the place of work. In order that these objects may be fully attained it is necessary that research should continually be carried out; and in order that doctors may become informed on the work required of them adequate educational schemes would have to be provided.

To achieve these purposes it is important to appreciate that co-operation from executive management must be forthcoming. Persons charged with the oversight of occupational groups automatically take on responsibilities towards those whom they manage. Among these responsibilities is the provision of reasonable working conditions and terms of employment, and this includes a positive and up-to-date policy concerning the well-being of employees at the place of work. In this connexion the need for the continuing study of individual and group problems by managements therefore assumes a high place. So the doctor, if he is to participate effectively, must become a partner both of managers and of employees in their enterprise.

Research

The present position in relation to occupational health research in this country is relatively satisfactory. Ever-increasing groups of workers are now investigating a wide variety of problems. Research is carried out by university departments, by individual industrial medical officers and medical inspectors of factories, and by whole-time workers, both medical and lay, appointed and paid by the Medical Research Council, which now takes a most active part in this field. The Industrial Health Research Board is responsible to the Council for the general oversight of the different activities which are going on and of their progress, and for general co-ordination. Its members include prominent representatives of employers and trade unions, so that the practical realities of day-to-day industry are not submerged to too great an extent by narrow academic issues. The Board itself does not supervise research. This is left partly in the hands of a number of committees which report direct to the Council and partly in the hands of research units in different parts of the country. The Council now has standing committees on occupational medicine, occupational physiology, occupational psychology, industrial pulmonary diseases, and toxicology in relation to industry. Continuation of these research activities is essential for the smooth progress and development of any future service. Those whose job it may be to plan and eventually supervise or administer the service would therefore be wise to establish contacts with the Council at an early stage.

Education in Occupational Health

Postgraduate education of doctors in occupational health is of fundamental importance in relation to its expansion. The subject has recently been discussed by Lane (1948). If there is to be adequate development, education and training will have to be provided for general practitioners, both with a view to fitting them for posts as industrial medical officers and, in a wider sense, to improve their individual efficiency in curative medicine. Adequate schemes will also have to be initiated for the more detailed training, at diploma level, which is necessary for whole-time medical officers and specialists in this field. But there must also be specially planned and more intensive courses for the potential consultant.

Courses of training for the Diploma in Public Health now include elementary lectures in occupational health, but these only serve to stimulate general interest in principles. There is some sporadic training provided in London for the Diploma in Industrial Health of the Royal Colleges and of the Apothecaries' Hall, but in England generally adequate training schemes for the D.I.H. are found only at Manchester University. In Scotland the University of Edinburgh provides training for its own D.I.H., as does the University of Glasgow for the D.I.H. of the Royal Faculty of Physicians and Surgeons of Glasgow. As Lane points out, it was the approved policy of the Association of Industrial Medical Officers (1945) in its report on education in industrial health that there should be just one D.I.H. for the whole of Great Britain. This argument still appears to be sound and logical.

It is assumed that the key men in any development of an occupational health service will be a small group of consultants, and for them an exacting training is necessary. There seems to be a clear case for an experiment at this level to be carried out in one centre. Consideration might therefore be given to the setting up, say at Manchester University, of some form of "occupational health staff college" where advanced postgraduate education would be available. The Department of Occupational Health at this university has now a basic framework for such an expansion. A wholly medical organization would fall short of real requirements, and the full collaboration of lay industrial experts would be essential. The venture would depend for success on the co-operation of firms and individuals outside the Manchester area; but with good will, and not necessarily at great cost, an organization could readily be set up for this important purpose. The longer the delay in instituting training at this level the greater will be the difficulty in instituting any service.

Some Further Suggestions for Development

The crucial question is, How can the present services best be developed in view of national requirements? A leading article in the *British Medical Journal* (1947) suggested three possibilities: (*a*) extension of the present system; (*b*) creation of a whole-time national service; and (*c*) a compromise between the two. Haphazard and uncoordinated development of present schemes can readily be dismissed. The creation of a whole-time State service is also difficult to foresee at the present time: there is a very considerable lack of doctors with sufficient training and experience in this branch of medicine; the medical manpower situation is critical; the financial state of the country appears to preclude any further State-aided ventures in the welfare–social field at this stage; and many firms and organizations would still wish to continue their own service. Some compromise between the two suggestions seems, therefore, the most reasonable basis for discussion.

Any scheme so developed should be based on the real demands of the population at work. These demands could well be determined by a series of surveys, perhaps carried out regionally. The plan should be related, so far as finance

is concerned, to the present economic crisis. It should take heed of the purpose of an occupational health service. It should embrace all occupational groups. It should be based on the conception of close integration with the National Health Service and should not expand in isolation. And it should be related to the medical man-power situation, with acceptance of the principle that the great majority of industrial medical officers would be general practitioners, acting in a part-time capacity.

New legislation is necessary for any satisfactory development to take place, so an Occupational Health Service Bill could be framed at a suitable opportunity. The Bill could be simple and brief, and allow for certain things, some of which may here be noted.

It could be officially recognized that occupational health services should be integrated, in a form to be determined after study, with the National Health Service.

A decision could be made that the Ministry of Health was the central authority empowered to supervise development.

An Occupational Health Department or Division could be formed within the Ministry of Health. Safeguards could be introduced to ensure that this would not become just a minor department of the Ministry. So far as technical and professional control of the Department is concerned this could devolve on a small medical committee or board. Members of this committee could be paid by the Ministry, but not necessarily on a full-time basis. Administrative control could be determined by the Minister.

A National Advisory Council on Occupational Health could be set up to advise the Occupational Health Department and the Minister, on the same type of basis as the National Advisory Council for the Employment of the Disabled.

A primary function of the Occupational Health Department could be to survey the field and, in consultation with the National Advisory Council, to advise the Minister regarding all developments in occupational health with special regard to its relationship with the National Health Service.

Regional Advisory Committees on Occupational Health could be set up under the National Advisory Council.

Regional Consultants in Occupational Health could be appointed, one of whose duties could be to initiate, conduct, and supervise regional surveys. These consultants could be appointed by and be responsible to the Occupational Health Department.

It could be agreed that further statutory extension would not take place until adequate information was available from the results of the surveys.

Organizations already providing occupational health services could be entitled to apply for registration, on an Occupational Health Services Register, as approved organizations. Standards for registration could be laid down by the Minister. Medical officers in these organizations could have certain professional responsibilities to the Occupational Health Department, through the Regional Consultant, in ways to be determined. These responsibilities could be defined by the Minister, on the advice of the Occupational Health Department in consultation with the National Advisory Council.

The Minister could be empowered to enforce the introduction of occupational health services, in the interest of employed persons, up to agreed standards as and when required.

Further consideration of these suggestions raises a number of points.

(*a*) In what way are the potential claims of different Government departments to become the central authority to be assessed? Prominent among these departments are the Ministry of Labour and National Service, either through its Factory Department or a new branch; the Ministry of National Insurance; and the Ministry of Health.

(*b*) The proposal that occupational health comes under the sponsorship of the Ministry of Health needs close consideration, for there are many implications. It may require a reorientation in policy and in administrative structure on the part of the Ministry of Health.

(*c*) The setting up of a National Advisory Council on Occupational Health with Regional Advisory Committees would ensure representation, from the beginning, of both management and employees.

(*d*) Appointment of a small nucleus of regional consultants in occupational health, as an essential basis of any development, does not appear unreasonable on the grounds of cost or man-power.* Selection and training of these consultants need special consideration. Their status might become analogous to that of Service consultants during the recent war.

(*e*) The proposal that organizations already providing adequate services should be "approved" within the meaning of an Act would do much to remove any ill-will and antagonism that might arise out of plans for change. The example and experience of such services, many of them of a high standard, are necessary as a guide to any future pattern.

(*f*) It seems reasonable to suggest that, under present circumstances, occupational groups themselves should pay the cost of their services. Nationalized industries such as coal and electricity have accepted this principle. Firms in private enterprise already providing services might welcome legislation making these services universal.

Conclusions

The institution of a comprehensive occupational health service at the present time would be doomed to failure on the grounds of lack of sufficiently trained medical man-power and the national economic situation.

On the other hand, many sections of the community are anxious for the development of this branch of medicine so that facilities similar to those found in the larger and more enlightened organizations could be made available to all employed persons at the place of work so far as circumstances would allow.

The only way in which fair expansion could take place would be through new legislation. This shou'd be based on the twofold argument of saving man-power and minimizing expenditure.

No expansion can effectively take place until more information is available about the needs of different occupational groups. This information could best be obtained by scientifically planned surveys. As a result of these a plan might be drafted in three to four years from now.

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PROGNOSIS IN DISSEMINATED SCLEROSIS

BY

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This investigation was undertaken to discover the average expectation of life of patients suffering from disseminated sclerosis and, in particular, whether any relation exists between the mode and age of onset and the progress and duration of the disease. It was thought that the type of symptom experienced at the very beginning of illness, and the age at which this symptom occurs, might have some bearing on the patient's expectation of life and on the probable extent of his disability in relation to time.

It was hoped to collect information regarding a large number of cases which had occurred in England during the last 50 or 60 years, distributed over a wide area. The aim was to include patients subjected to very varying conditions of environment, occupation, nutrition, and social circumstances. It was intended thus to minimize the effects of additional factors which no doubt influence the prognosis in disseminated sclerosis.

The problem then arose whether such information was at all available. Investigation showed that in the London area (and this probably applies equally to other areas) the fate of patients with disseminated sclerosis is limited to four possibilities, which have changed scarcely at all over the last 60 years. (1) They may remain in their homes, receiving the amount of care and nursing compatible with their incomes, the kindness or otherwise of any existing relatives, and the extent of the local charities, State or otherwise. (2) They may with the greatest difficulty obtain admission to a private hospital or nursing-home, this being reserved for the higher-income group. (3) They may obtain admission to the Putney Home for Incurables; the Streatham Home for Incurables; or a home for incurables belonging to one of the religious communities—Church of England, Catholic, or Jewish. Service men or ex-Service men may go to the Star and Garter Home in Richmond. (4) They may—but this only as a last resort—obtain admission to London County Council Homes for the Chronic Sick—these recently having become State-owned.

Collection of Case Records

It is thus clear that the majority of patients who suffer from disseminated sclerosis remain in their own homes. A certain number of these have attended out-patient departments in various hospitals, and some have at times been admitted to the former voluntary hospitals. They were rarely retained for long periods, and as a rule remained only during an acute episode or phase. Of these, some records were obtainable from the National Hospital for Diseases of the Nervous System. None was available from other voluntary hospitals, although no doubt they do exist.

In the greater number of cases, then—those treated in their own homes—there are no records of the illness. Of the rest, the London County Council has not in the past been able to keep detailed records, and unfortunately could not be of any assistance here. Similarly, no records were available from any private nursing-home or hospital. Thus neither the wealthy nor the destitute sufferers could be included in this series. There remained the somewhat selected cases to be collected from the records of the institutions mentioned above.

Admission to the Putney and Streatham Homes used to be gained by a rather curious system in which the prospective inmate had to collect a number of "votes." The patients were of a particular group of society, usually well-educated persons who had lost their fortunes, or teachers, artists, and professional men and women. In some of these homes the system of admission has recently somewhat changed, but the class of patient remains the same.

Records were also available from the Star and Garter Home for Disabled Sailors, Soldiers, and Airmen, and here the patients were of course from a highly selected section of the population. The religious institutions unfortunately had no records available, although the authorities concerned were very willing to be of assistance. The records of the Jewish Home for Incurables had been destroyed by bombing during the war, and none of the other homes which were approached could supply suitable records.

The cases were finally obtained from the Putney Home for Incurables, the Streatham Home for Incurables, the Royal Midland Home for Incurables, the Star and Garter Home, and the National Hospital for Diseases of the Nervous System. In addition, Professor Cloake, of Birmingham, kindly supplied six cases from his own records.

Investigation showed that the records at the National Hospital concerned cases that were in some way unusual—either because the disease was particularly severe or because it was of especially early or late onset. It was therefore decided to examine these as a separate group.

The cases obtained from the above-mentioned hospitals and institutions did not conform very satisfactorily to the original plan, which was to draw material from widely differing sections of society over a very wide area. It was hoped, however, that the cases would be characteristic enough to yield information that might be generally applicable.

Analysis of Material

It was decided to examine the case records between the years 1880 and 1947, using only those in which post-mortem examination confirmed the diagnosis or in which symptomatology during life was so characteristic as to be unmistakable. It was hoped in this way to exclude cases of doubtful pathology, although it was realized that such selection was undesirable from the statistical point of view, as general application of the results was intended.

One of the primary objects of the research, the relation of the age of onset to the prognosis in disseminated sclerosis, could not, however, be achieved. The reason was simple. One of the essential factors—the precise determination of the age at which the disease began—was unobtainable. There was of course no way of verifying the correctness of the recorded time of onset. The difficulties involved in obtaining accuracy regarding the earliest symptoms in this disease are well known. First, the original symptoms may have been of a very vague and fleeting nature; secondly, the patient may have forgotten the episode or may fail to connect it with his present disability. In either case he or his relatives omit to mention it.

It was felt that, except for the cases from the National Hospital, the recorded ages of onset were not reliable enough to be of any value whatever, as the conclusions to be drawn depend entirely upon accuracy in this respect.

The notes made in the homes for incurables have been written by those more concerned with the patients' condition on admission and their subsequent progress than with the details of past history.

It was therefore decided to abandon attempts to relate the age of onset to any aspect of the disease. It was thought that, except in a series in which a most scrupulous watch had been exercised over patients from a very early age, it would not be possible to vouch for the accuracy of any conclusions to be drawn therefrom. It was, however, possible to obtain certain other information from the material.

Duration from Onset to Death.—First, it was decided to investigate the duration of the disease from the onset of disability until death. The "onset of disability" was taken to be the time when symptoms occurred which made the diagnosis of disseminated sclerosis probable or certain. The ages recorded were those at which symptoms caused some permanent disability (however slight), or at which the symptoms, though of a transient nature, were followed so shortly by another episode or series of episodes as to leave little doubt regarding the pathology. The cases were divided into groups according to the age at which "disability" started.

Group I, onset 0–10 years: one case (National Hospital).
Group II, onset 11–20 years: 33 cases (21 from institutions, 12 from the National Hospital).
Group III, onset 21–30 years: 97 cases (79 from institutions, 18 from the National Hospital).
Group IV, onset 31–40 years: 87 cases (75 from institutions, 12 from the National Hospital).
Group V, onset 41–50 years: 55 cases (41 from institutions, 14 from the National Hospital).
Group VI, onset 51–60 years: 12 cases.
Group VII, onset 61–70 years: one case (National Hospital).

Only groups II, III, IV, and V contained enough cases to warrant statistical investigation. In these groups the average duration of life from "onset of disability" until death was estimated.

The cases from the National Hospital were examined separately because of their unusual nature.

The results are shown in Tables I and II.

TABLE I.—*Cases from the Institutions*

	Group II	Group III	Group IV	Group V
Total duration in years	524	1,467	1,258	579
No. of cases	21	79	75	41
Average duration in years	25	18·6	16·8	14·1
Sum of squares	16,024	32,799	24,962	10,275
No. of cases × sum of squares − total squared	61,928	439,032	289,586	86,034
Standard deviation	12·1	8·4	7·2	7·2
Standard error	2·65	0·95	0·83	1·13

TABLE II.—*Cases from the National Hospital*

	Group II	Group III	Group IV	Group V
Total duration in years	118·1	158·1	80·5	70·5
No. of cases	12	18	12	14
Average duration in years	9·8	8·8	6·7	5·0
Standard deviation	15·4	7·6	4·3	4·4
Standard error	4·46	1·79	1·25	1·17

These figures do not establish statistically any relation between age of onset and duration of disease.

Classification of Earliest Symptoms.—Secondly, a classification was made of the relative frequency of the various types of symptoms recorded as being the earliest of which the patients were aware. This classification do not pretend to indicate the relative frequency of the various modes of onset of disseminated sclerosis, but merely tabulates the relative occurrence of overt symptoms in the case records that were available. The age when such symptoms made their appearance was also noted, and the cases were grouped accordingly.

In 309 cases in which the age when the first symptoms appeared was definitely stated in the history the groups are as follows:

	No. of Cases
Group I, under 10 years	1* (0·32%)
Group II, 11–20 years	34 (11·0%)
Group III, 21–30 years	110 (35·5%)
Group IV, 31–40 years	92 (29·7%)
Group V, 41–50 years	59 (19·0%)
Group VI, 51–60 years	12 (3·9%)
Group VII, 61–70 years	1* (0·32%)

* Proved by post-mortem examination at the National Hospital.

It may be noted that this distribution closely resembles the figures tabulated by Adie (1932). Adie, however, regarded his figures as indicating true age of onset. In the present series "age of onset" is regarded as indicating the "onset of disability," as described above.

Death in Disseminated Sclerosis

Finally, an attempt was made to investigate the immediate causes of death. According to the records (excepting the National Hospital series) there are two main opinions on this subject, both equally unfounded on fact, necropsy being rarely performed on institution cases.

In many instances death was attributed to disseminated sclerosis alone, without bulbar symptoms necessarily having been present. An overwhelming episode of the disease was apparently considered sufficient reason to account for death. In the remaining cases it was thought necessary to mention as immediate cause of death a concomitant disease such as pyelitis, cystitis, asthenia, septic absorption from bedsores, or bronchopneumonia. These concomitant diseases were, however, beliefs rather than facts, largely unconfirmed post mortem, and cannot be regarded as accurate.

The following figures relating to deaths ascribed to disseminated sclerosis have been taken from the Registrar-General's Statistical Reviews:

Year	Deaths Assigned	Crude Rate per 1,000,000 Population*
1931	755	19
1932	762	19
1933	733	18
1934	697	17
1935	781	19
1936	845	21
1937	836	20
1938	754	18
1939	885	21
1940	984	25
1941	945	24
1942	913	24
1943	848	22
1944	845	22
1945	860	23

* For the years 1931–8 the deaths include non-civilians and the rates are per 1,000,000 population, whereas for the years 1939–45 the deaths are those of civilians only and the rates per 1,000,000 civilian population.

The deaths of non-civilians in the years 1939–45 were 1, 4, 2, 1, 1, 1, and 5 respectively. No rates are available

Regarding additional causes of death, the only year in which the secondary causes were tabulated was 1925. In that year of 733 deaths assigned to disseminated sclerosis 522 had no secondary cause mentioned. Of the rest, "the more important secondary causes were found to be cerebral haemorrhage, other forms of paralysis, bronchitis, pneumonia, heart diseases, kidney and bladder diseases."

The only cases worthy of mention among the records examined are 51 of those from the National Hospital and the six from Birmingham in which necropsy was performed. A survey of these 57 cases showed that death was ascribed

to disseminated sclerosis, with the following secondary causes :

	No. of Cases
Disease of the urinary system (with subsequent toxic absorption or uraemia)	12 (21·1%)
Disease of the respiratory system (bronchopneumonia, 15; basal pneumonia, 2; pleurisy, 1; pulmonary embolism, 1; empyema, 2; lung abscess, 1; tuberculosis, 4)	26 (45·5%)
Carcinoma	2 (3·5%)
Perforated peptic ulcer	1 (1·8%)
Death during laminectomy	3 (5·3%)
Cerebral haemorrhage	1 (1·8%)
Overdose of a hypnotic	1 (1·8%)
Aplastic anaemia from arsenical treatment	1 (1·8%)
Disseminated sclerosis involving the medulla	2 (3·5%)
No immediate cause (death ascribed to cachexia and septic absorption from bedsores)	8 (14%)

Here again no conclusions are justifiable beyond the fact that diseases of the urinary and respiratory tracts seem to have accounted for the greater proportion of deaths.

Discussion

An important contribution to the study of the prognosis in disseminated sclerosis has recently been made by Ragnar Müller (1949). He mentions that the literature on this subject "mainly gives casuistic information and reports expressing the respective author's personal opinion, which opinion is not supported by objective facts." Müller conducted a very careful investigation of 810 cases collected from various hospitals in Sweden. He concluded from his results that the prognosis is to a great extent dependent on the type of the initial symptoms, the age at which the patient becomes ill, and also probably, though to a less extent, on sex. He stated :

"When the disease commences with sensory or cranial nervous disorders the prognosis is considerably more favourable than when motility impairments are initial. In the latter case the patients become invalids much earlier. The prognosis is appreciably better when the patients are taken ill at a low than at a high age, in respect to both men and women. This applies even if younger and older persons become ill with symptoms of the same kind. It also seems as if invalidity sets in, on an average, at an earlier age among persons whose illness starts at a high than at a lower age. The prognosis seems to be less good for men than for women. The average lifetime remaining after the incipience of the disease seems to lie between 16 and 34 years.

"From this investigation it cannot be deduced that the changes in the disease picture which are liable to take place in connexion with childbirth are of specially malign character."

Conclusions

It is clear that research regarding the incidence and prognosis of disseminated sclerosis is severely handicapped by inadequacy of the existing case records.

Until accurate notes are available concerning all those suffering from disseminated sclerosis who come under medical supervision (even these being possibly only a small proportion of the total number of patients), no more precise data regarding the onset and prognosis of the disease are likely to become available.

Scrupulous attention to details of early history, as well as the following-up and the long-term observation of patients in all out-patient departments and homes for incurable diseases, is very desirable.

I wish to express my thanks to the National Multiple Sclerosis Society of New York for the very generous grant for this investigation, and to Dr. Macdonald Critchley for his encouragement and helpful criticism. I am also indebted to the authorities in charge of the Putney, Streatham, and Royal Midland Homes for Incurables, and the Richmond Home for Disabled Service Men, who allowed me to examine and quote their records; to Dr. J. G. Greenfield at the National Hospital; and to Professor P. C. P. Cloake, of Birmingham, who supplied some records of his own cases. I wish also to thank Dr. J. A. Fraser Roberts and Dr. W. J. Martin, of the London School of Hygiene and Tropical Medicine, who so kindly gave their advice and help.

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GYNAECOMASTIA AND TESTICULAR APLASIA

BY

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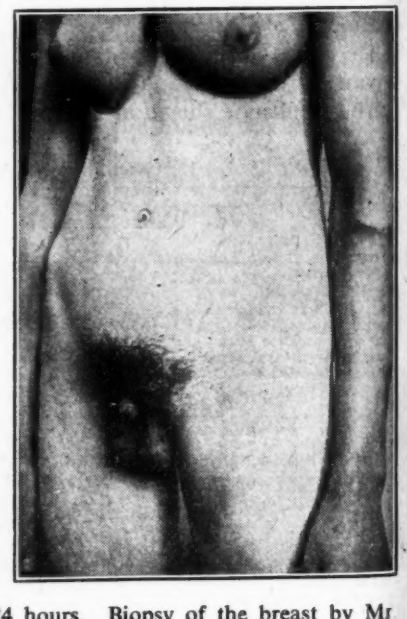
A case of gynaecomastia with presumed testicular aplasia is described and the reason for the appearance of gynaecomastia in this condition is considered.

Case Report

The patient, a youth aged 17, was referred to me by a colleague, Dr. M. C. Chapman. He complained of pronounced breast development starting at the age of 14. He had not shaved or experienced emissions or erections. He had evinced no interest in members of either sex, but his hobbies had always been those of a boy. He had not had mumps, or disease of or injury to the testicles.

Examination revealed pronounced gynaecomastia (see photograph). The penis was small and the urethra opened at the base of the glans with a patulous orifice. The scrotum was normal and the testicles were normally developed. A sound could be passed down the urethra into the bladder; the prostate could not be felt (Mr. B. H. Page). Pubic hair of feminine distribution was present. Axillary hair was scanty, and the face was covered with a fine down only. His height was 63¼ in. (161 cm.), span 66 in. (168 cm.); head to pubis measured 32 in. (81 cm.), and pubis to ground 31½ in. (80 cm.). His manner was retiring and diffident. Urinary gonadotrophins (Dr. A. M. Hain, of Manchester University) amounted to 30 mouse units in 24 hours. Biopsy of the breast by Mr Page showed hyperplasia of duct elements and fibrous tissue (Dr. J. F. Heggie). Testicular biopsy was refused. A laparotomy, undertaken because the 24-hour excretion of 17-ketosteroids totalled 40 mg., revealed no enlargement or tumour of the adrenals, or tumour of aberrant adrenal tissue anywhere in the abdomen. Subsequent 17-ketosteroid estimations have been within normal limits and the original estimate is believed to have been erroneous. The only adequate treatment of the gynaecomastia is surgical removal, but this his father declined to allow. Treatment with testosterone propionate has not affected the gynaecomastia, but it has led to a quite marked increase in self-confidence and masculine aggressiveness.



Discussion

Gynaecomastia has occurred in workers engaged in the manufacture of stilboestrol and in a number of diseases, the most important of which are tumours of the adrenal cortex, aplasia, destructive lesions and certain tumours of the testicle, and cirrhosis of the liver. Less common causes are pituitary tumours, Albright's disease, and hyperthyroidism; the condition has also followed prostatectomy. In the absence of evidence pointing to any other of these possibilities, the case reported here is presumed to belong to the group of testicular aplasias—probably the commonest cause, anyway. Proof would depend upon testicular biopsy, which has been refused.

Gynaecomastia occurs most characteristically in the type of testicular aplasia described by Klinefelter, Riefenstein, and Albright (1942). Features of this type are aplasia of spermatogenic tissue and Sertoli cells, survival of interstitial tissue with relatively normal androgenic function, a high output of urinary gonadotrophins, and of course gynaecomastia. Heller and Nelson (1945) contrast this with the eunuchoid type in which aplasia of all testicular tissue occurs, including interstitial cells, with greatly diminished androgenic activity; the output of gonadotrophins was increased but gynaecomastia occurred much less commonly. They pointed out the existence of intermediate cases, indicating the essential relationship of the two types.

Castillo, Trabucco, and Balze (1947) reported a third type in which only spermatogenic cells were affected, Sertoli cells and interstitial cells remaining intact. Androgenic activity was relatively normal, gonadotrophin output was normal, and gynaecomastia had not been observed. They suggested that oestrogen was normally secreted by Sertoli cells, and that the high output of gonatrophins in the types with Sertoli-cell aplasia was due to the loss of the inhibitory effect of oestrogen upon the pituitary. Berthrong, Goodwin, and Scott (1949) have considered the secretion of oestrogen by Sertoli cells at some length, and have collected a good deal of evidence in favour of the hypothesis. They equate oestrogen with the "inhibin" of the older writers. So far no case intermediate between the Klinefelter and the Castillo type has been reported in the literature. The present case may well constitute a link, showing as it does gynaecomastia with relatively normal androgenic function and normal gonadotrophins. However, as testicular biopsy was refused there is no histological proof.

The physiology of mammary development is still imperfectly understood. Oestrogen and progesterone are undoubtedly important factors, but the position of the anterior pituitary is obscure. Turner (1944) and his school believe that mammary development is dependent upon two pituitary hormones, mammogen I and II; oestrogen and progesterone are thought to exert their action upon the mammary gland only through promoting the excretion of these pituitary principles. This hypothesis is not generally accepted.

The mechanism through which gynaecomastia appears in the testicular aplasias may now be considered. Over-excretion of oestrogen seems to have been excluded. Klinefelter, Riefenstein, and Albright, and Heller and Nelson found oestrogen secretion to be normal or low in all cases examined. Gynaecomastia occurs not in the type of case with intact Sertoli cells but in the types with aplasia of these cells and presumably a secretion of oestrogen lower than normal. Overproduction of anterior pituitary hormones would fit the facts better. Thus gynaecomastia occurs most commonly in the group described by Klinefelter *et al.*, in which gonadotrophin output is high, and so far has not been described in the group with normal gonadotrophins. On the other hand, it fails to explain why gynaecomastia is much less common in the eunuchoid type and in castrates, in whom gonadotrophins again are high. The finding of more cases with normal gonadotrophins, like the one described here, would further disturb the hypothesis.

Dr. Raymond Greene suggested to me that the explanation of gynaecomastia should be sought in another direction: testicular aplasia is very likely due to a genetic disturbance. The same disturbance may in some cases also produce an increased susceptibility of the mammary tissues to normally circulating oestrogen. The idea has a good deal to recommend it.

Summary

A case of gynaecomastia is presented. Testicular aplasia is presumed. It is suggested that gynaecomastia in these cases may be due to a genetically determined over-sensitivity of the mammary tissue to normally circulating oestrogen.

My thanks are due to Mr. C. W. Hall for the photograph.

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BRACHIAL PLEXUS BLOCK

REPORT ON 350 CASES

BY

S. V. HUMPHRIES, M.A., M.R.C.S., L.R.C.P.

Over a period of five years brachial plexus analgesia was administered for all operations on the upper limb when local analgesia was unsuitable. The patients were African or Bantu males aged between 18 and 65 employed on the Van Dyk Mine in the Transvaal. The operations varied from amputation through the middle of the humerus and the treatment of severe compound fractures of the upper arm and forearm to comparatively minor procedures on the fingers and hands. The cases will be divided into two series.

First Series (*Various Techniques Used*).—Total number of operations performed, 232. Perfect analgesia in 176, imperfect in 52, failures 4. The term "perfect" is used to indicate that no pain was felt; "imperfect" that the patient said he felt pain at some stage; and "failure" that the analgesic produced no appreciable effect. Imperfect results occurred with all analgesics used and with the six different techniques employed. The average amount injected of 1% or 2% procaine (or other analgesic of corresponding strength) was 36.5 ml. The reasons for the high percentage of imperfect results in this series were three: (1) Inexperience of the operator, who, trying different methods and analgesics, made no substantial improvement until the Macintosh and Mushin (1947) technique was employed and one drug—2% or 1% procaine, freshly prepared—was singled out for use. (2) The use of unsuitable, old, or too dilute analgesics. (3) Failure by the patients (all primitive Africans) to co-operate. The patient's co-operation is not required with the Macintosh and Mushin technique, which does not necessarily depend on subjective hyperaesthesia.

The approach for brachial plexus block by the method of Macintosh and Mushin. The patient is lying with a pillow under his shoulders and head. The shoulder on the affected side is depressed, the head is turned to the opposite side, and the muscles are relaxed. (From *Local Anaesthesia: Brachial Plexus*, by R. R. Macintosh and W. W. Mushin. By permission of the authors and Blackwell Scientific Publications.)

Second Series (Macintosh and Mushin Technique Used).—Total number of operations performed, 118. Perfect analgesia in 113; imperfect in 4; and in one patient, classified as a failure, though perfect analgesia was obtained the operation had to be postponed owing to the toxic effects of the agent. The drug used for all but one case was procaine—2%, 1%, or a combination of the two. The four patients in whom imperfect analgesia was obtained did not, however, require any supplementary regional or local analgesic for the completion of the operation.

Comments

The following observations are based on my experience.

1. Brachial plexus block is a very valuable, safe, and inexpensive form of analgesia which can be learned at a distance of 7,000 miles through the medium of a small book. It is particularly suitable in lean subjects, to whom my experience has been recently confined, the Bantu being a lean people.

2. Procaine in 2% concentration is a satisfactory analgesic for the average case. It produces the correct degree of analgesia quickly and consistently, though it is not so reliable in providing an effect of sufficient duration. This is borne out by the observations of Damarjian (1946). It is comparatively non-toxic, even when a single dose of 70 ml. of 2% procaine is given, as suggested by Patrick (1940). Procaine should preferably be injected with adrenaline, as recommended by Murphey (1944), because it then produces a longer effect and is less likely to cause toxic symptoms, provided that the patient is not sensitive to adrenaline and that injection into a blood vessel is avoided. The formula I used is :

Procaine hydrochlor.	87.5 gr. (5.67 g.)
Adrenaline 1-1,000	34 minims (2.04 ml.)
Phenol	9 minims (0.56 ml.)
Sterile saline to make	½ pint (284 ml.)

This solution is not boiled, but I have never known sepsis to follow its use. If it is desired to give 1% procaine, the above solution is simply diluted with an equal quantity of sterile saline. In 18 patients adrenaline was omitted from the injection in order to produce a quicker and shorter action. The procaine must be freshly made up. It should not be more than one week old, as it gradually loses its potency.

3. The block is as effective for extensive as for minor operations. For long operations the needle may be left *in situ* after the first injection and subsequent injections given at hourly intervals. This was done in four patients, in one of whom 140 ml. of procaine was given by repeated injection over a period of five hours. Ansbro (1946) has evolved a technique for such continuous analgesia. In one of my patients the plexus on both sides was blocked successfully.

4. It is preferable to avoid giving morphine until just before, or after, injecting the analgesic, or not to give it at all, so that the patient's wits are not dulled 20 minutes later when the efficacy of the analgesia has to be confirmed.

The main difficulties and dangers encountered were as follows.

Those Due to Procaine.—(*a*) Involuntary movement or twitching of the facial muscles, sometimes with smacking of the lips, which occurred in six patients. No treatment was given to two of them, 10 ml. of thiopentone was administered to one, 5 ml. to one, and 3 ml. to two. No ill effects resulted. (*b*) Nervous excitement occurred in one patient to whom 60 ml. of 2% procaine without adrenaline had been given. The condition responded to chloral and potassium bromide, but a small dose of thiopentone would probably have been more effective.

Those Due to Accidental Penetration of a Blood Vessel.—(*a*) Tachycardia occurred in two patients. One had been given a solution containing adrenaline, the other received no adrenaline. (*b*) Dizziness occurred in one patient. (*c*) Dyspnoea occurred in one patient : oxygen was administered, and there were no ill effects. (*d*) Analgesia was delayed in 11 patients : the delay was due to the formation of a haematoma.

I have had no case of pneumothorax due to penetration of the pleura or lung, but I have seen such a case demonstrated at a clinical meeting.

Summary

A report is made on 350 brachial plexus blocks, of which 118 were administered by the Macintosh and Mushin technique. This gave better results than other methods.

Reasons are suggested for the success obtained by the latter technique.

Observations are made from my experience of brachial plexus analgesia.

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The American National Society for the Prevention of Blindness has decided to increase its budget for preventive education and research to $500,000. In his report to the annual meeting, Mr Mason H. Bigelow, a New York lawyer, who is president of the society, said that an estimated 22,000 men, women, and children would become blind in the United States during the coming year, yet 50% to 75% of this blindness could be prevented by simply using the knowledge they already had. "In our schools, for instance, 4,500,000 children have some form of visual defect but only a fraction of these cases are being found and treated," Mr. Bigelow said. The public must become as conscious of the significance of eye health as it was of bodily and mental health, as alive to the threat of eye accident and eye disease as it was to the threat of other health hazards. Discussing the need for much more research than is being done at present, he said that less than a million dollars a year was being spent on eye research, while over 50 times that amount was spent annually in tax funds alone for care of the blind. A survey made by the society showed that Federal agencies were spending approximately $365,000 a year on eye research, with an additional $550,000 spent by the nation's combined medical school and other laboratories.

ANKYLOSING SPONDYLITIS TREATED BY OSTEOTOMY OF THE SPINE

BY

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AND

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Early ankylosing spondylitis is now so well recognized that the "question-mark" spine characteristic of the untreated late disease will not be common. It is unlikely, therefore, that any one surgeon can acquire an extensive experience of the operative treatment of this type of case. The following case is recorded as an addition to the general experience.

An operation was first described by Smith-Petersen *et al.* (1945), who had performed it in five cases of ankylosing arthritis. The operation was a formidable one, but they laid down certain general principles: that the osteotomy must be done in the lumbar spine to avoid the splintage of the ribs and their articulations; that the osteotomy must include the articular facets, as ossification at these facets is the most important single factor in preventing correction of deformity; and that the operation should not be delayed too long. The optimum time would seem to be immediately the acute phase begins to subside.

La Chapelle (1946) described a simpler single osteotomy, which we used, but he combined this with a terrifying description of forcible rupture of the anterior common ligament on the table. J.-J. Herbert (1948) described a two-stage operation. The second stage consisted in a lateral approach to the anterior aspect of the vertebral bodies, division of the anterior common ligament, and, if necessary, the placing of a wedge graft from the tibia between the bodies. All his cases did not require this second stage.

FIG. 1.—Appearance before operation.

Case Report

The patient, a reasonably intelligent man aged 34, had been under our care in 1941. His back then was in good alignment, and it was maintained in this position by means of exercises and a Thomas back support until 1945, when he ceased to attend the aftercare clinic. He had apparently discarded all treatment owing to recurrent attacks of bronchitis, and his condition when he returned is strikingly shown in Fig. 1.

He was admitted to hospital in late 1947, and an attempt was made to improve his position on a divided plaster bed, but with little success. Forcible manipulation under general anaesthesia was rejected, as we had heard of several fatalities. Osteotomy of the spine was therefore considered, with some apprehension on our part in view of the history of bronchitis and his poor chest expansion. However, as his lungs were now clear, and he was very enthusiastic (not having read the literature), the operation was performed in February, 1948.

We had anticipated that complete correction would not be obtained on the table, and for this reason it was decided to nurse him during the immediate post-operative period on a divided bed. It had the further advantage that the bed could be prepared before operation, and we should not place a further burden on the patient at the end of operation by the application of a plaster jacket. We also anticipated that there might be considerable paralytic ileus following the straightening out of the patient, analogous with the frame sickness which often occurs after a subject with a tuberculous spine or hip is first placed on a frame.

In fact, none of these difficulties was experienced. The operation (F. W. S.) was performed with the patient on his right side. This position was adopted to avoid the abdominal pressure of the prone position, and also because we wished to remove more bone on the left side to correct his lateral deviation. The osteotomy was done between the first and second lumbar vertebrae, and the bone was removed with a fine osteotome and nibbling forceps as indicated in Fig. 2. The gap began to close spontaneously as the osteotomy was almost completed, and in fact some difficulty was experienced in getting the apical bone from the left-sided wedge, as the instruments were gripped by the closing laminal remnants. The wound was closed in layers, and the patient placed on his divided bed.

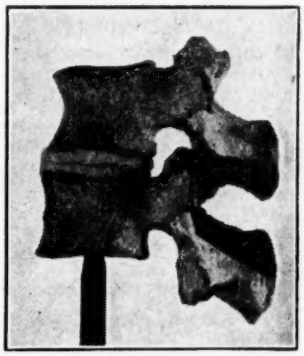

FIG. 2.—Showing portion of bone removed.

It is probable that very little further correction occurred once the patient left the table, and after seven days the bed was converted into a solid one. He was turned after three weeks on to a turning case, and after three months an Albee graft was made over the osteotomy site (G. K. R.). There were no immediate post-operative complications, neither ileus nor root pains disturbed the patient at any stage, and there was no shock.

He was allowed up six months after the first operation. The result of this is shown in Fig. 3. The good correction of the whole spine which can be obtained by lumbar osteotomy is well shown. Smith-Petersen did osteotomies at several levels; but in ankylosing spondylitis, particularly if done relatively early, before the anterior common ligament is too hard, it would be easy to obtain an over-correction, a result as inconvenient to the patient as his original condition.

A late complication was the stiffening of the hips. These had been restricted in movement before operation, but, despite all we could do to keep them moving, they had stiffened considerably during his immobilization. Worse still, they had become painful. Arthroplasty was contemplated, but was rejected for the time being, as the results in ankylosing spondylitis are far from uniformly successful. A course of deep *x*-ray therapy was given to his hips, and a plaster spica was applied to the right hip.

FIG. 3.—Appearance after operation.

which was giving most trouble. By this means he was able to get up and walk. After two months the plaster spica was replaced by a block leather one, and the man has steadily improved so that he now needs no splintage whilst in the house and uses his spica only for going out of doors.

Experience of this case has made us feel that the operation is a useful one in these now rare cases. Despite the fact that the patient's course was at all times smooth, we should again take the operation in easy stages and resist the temptation to do the Albee graft at the time of the original procedure, for we believe it is important to keep the patient well at all times, and a period of considerable shock following the operation might produce a disastrous chain of complications.

Summary

A case of ankylosing spondylitis with severe deformity of the spine treated by osteotomy is described.

The operation in this instance proved reasonably easy to perform and there were no complications. However, it is thought that the potential dangers are great and that all precautions should be taken, including limiting the initial operation to correction of the deformity and leaving any grafting until a later date.

The fact that the anterior common ligament in this case was not highly ossified probably contributed largely to the smoothness of the correction, and for this reason once the operation is indicated it should not be unduly delayed.

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Medical Memorandum

Fatal Air Embolism in Artificial Pneumoperitoneum

This fatal accident is reported as a reminder that the simple procedure of artificial pneumoperitoneum is attended by the risk of air embolism. The operation is otherwise relatively safe and, in contrast to pneumothorax, is rarely attended by complications. Fatal cases of air embolism have been described by Simon (1925), Trimble and Wardrip (1937), Warring and Thomas (1940), Simmonds (1946), Mitchell *et al.* (1947), Bailey (1948), and Trimble *et al.* (1948), and there are several reports of less serious cases. Most authors stress the infrequency of the accident and note that it usually results from a breach of technique.

CASE REPORT

A woman aged 38 was admitted to hospital with left lower-lobe pneumonia in March, 1946. The sputum contained tubercle bacilli, and there was later a small spread of the disease to the right upper zone. In August, 1946, the left phrenic nerve was crushed and a week later a pneumoperitoneum was induced. Refills were given below the right costal margin, as the patient complained of pain and discomfort when the needle was inserted in the left hypochondrium. The left lung became atelectatic, cavitated, and fibrotic, and the right upper-lobe lesion eventually broke down to form a small cavity. The patient's general condition improved enough for a left thoracoplasty to be considered, and the pneumoperitoneum was gradually reduced. A right artificial pneumothorax induced on February 1, 1949, produced selective collapse of the right upper lobe.

On February 21 she was given a refill of her pneumoperitoneum, the needle being inserted as usual 1 in. (2.5 cm.) below the right costal margin at the outer border of the rectus sheath. The pneumoperitoneum was small at the time, most of the air had collected under the stretched and paralysed left hemidiaphragm, and there were adhesions between the right cupola and the liver. A pressure of +6 to +10 mm. H_2O was obtained and air ran in easily, but after 50 to 100 ml. the patient complained of breathlessness and a bubbling sensation in the chest. She rapidly became unconscious and deeply cyanosed, gave a few gasps, and died.

At necropsy (Dr. H. Williams) the needle was found to have entered the liver, the venous channels of which contained air. The gastro-hepatic omentum was distended with air. Frothy blood was present in the right heart and the pulmonary and cerebral vessels. The left lung was fibrotic and shrunken, with excavation of the upper lobe. The right lung was about half collapsed.

It was considered that because of her low respiratory reserve the patient died from a comparatively small air embolism which might not have proved fatal in a normal person.

COMMENT

In the experience of one of us (E. G. S. L.) this was the only case of air embolism recognized in some 2,750 refills in 110 patients.

Most cases of air embolism during pneumoperitoneum treatment have followed injection of air into the liver. Occasionally, as in Stokes's (1938) second case, air had entered a mesenteric vein. In the few cases occurring at induction air may have been injected into a vein in the abdominal parietes. In the present instance the point of the needle was probably lying at first in the peritoneal cavity near the gastro-hepatic omentum, and the liver was impaled upon it by a respiratory movement of the right hemidiaphragm, to which the liver was bound by adhesions.

If it can be avoided, refills should not be given in the right upper quadrant of the abdomen, because of the risk of haemorrhage or air embolism from damage to the vascular liver. The risk is particularly great if the right cupola is not paralysed and if there are adhesions between it and the liver. The intercostal route is attended by risk of accidental pneumothorax and by air embolism through puncture of a lung. The site of election for the induction of a pneumoperitoneum and for refills is 1 in. (2.5 cm.) below the left costal margin at the lateral border of the rectus sheath, as dense adhesions are rarely encountered there and the only vascular solid organ, the spleen, lies posteriorly.

We wish to thank H.M. Coroner, Mr. L. F. Beccle, for permission to publish the necropsy report.

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According to the Ministry of Labour's Report for the Year 1948, 234,494 men and women were medically examined for National Service (some of these were re-examinations), and 78 men were prosecuted for refusing to submit to medical examination. At the end of the year about 913,000 were voluntarily registered as disabled persons under the Act of 1944. The great majority of these were in employment.

Reviews

THE WORLD PROBLEM OF TUBERCULOSIS

Tuberculosis. A Global Study in Social Pathology. By John B. McDougall, C.B.E., F.R.C.P.Ed., F.R.S.Ed. (Pp. 455. £1 12s. 6d.) Edinburgh: E. and S. Livingstone. 1949.

Not so many years ago one moderate-sized volume would have contained a comprehensive account of our knowledge of tuberculosis, but to-day the disease "makes so many demands in every field of clinical and public health activity" that many books could be written on its various aspects without overlapping or repetition. Dr. McDougall presents information on infection, morbidity, and mortality from tuberculosis in many countries, and makes a detailed survey of the factors considered responsible for the extent and severity of the disease in each.

The work is divided into four parts. The first provides factual information on mortality rates and other data from many countries; the second contains a summary of the prevailing views on epidemiological factors; the third discusses these factors in more detail and gives valuable information on the magnitude of the tuberculosis problem, with a reasonably full account of the organization of tuberculosis services; and the fourth briefly evaluates the problem and leads up to the general conclusions.

As the author points out, it has not been possible to avoid some overlapping in the various sections. But many races and countries are mentioned, and it is surprising how infrequently the subject matter is duplicated or arguments are repeated. It is appreciated that the tuberculosis statistics from many countries are unreliable, but those given in the first part of the book provide a good general picture of the vastness of the tuberculosis problem throughout the world. The figures of morbidity and mortality of the disease in many countries create a feeling of despondency and dismay, but comfort is given in the chapter describing the marked decline in mortality that has occurred during the past 25 years. Proof is provided that human effort can go far towards controlling the degree of infection, even in most susceptible groups in heavily infected communities. This is exemplified in the evidence from Jordan, in the Riverside Sanatorium District of Minnesota, where a remarkable reduction in the tuberculous infection in the community took place as the result of an intensive preventive programme.

An extremely interesting section describes tuberculosis mortality in successive generations, and numerous "cohort" or "generation" charts are figured to portray the mortality throughout the entire span of life for each generation born in a particular period. These figures demonstrate the close relationship between the incidence of infection and tuberculous disease in infancy and childhood and the subsequent course of tuberculosis in adult life.

There is a full discussion on the results of tuberculin-testing surveys, and the information given proves that the tuberculin test ranks in importance with the discoveries of Laennec, Villemin, and Koch. Some of the more important results of mass radiography surveys are conveniently summarized in tabular form and leave no doubt about the value of this technique in case-finding and indirectly as a measure to prevent the spread of infection.

A considerable portion of the book describes "contact" infection and the influence of the standard of living on the disease, and the author continually stresses the importance of natural resistance as the dominant factor in determining its development. The theory that active tuberculosis develops as a result of primary infection and later as a sequel of endogenous exacerbation is generally favoured. The great importance of nutrition is demonstrated by an instructive chart showing the calories and protein from pre-war food supplies in 70 countries, and by numerous references to the food consumption of different peoples.

In a work which touches on so many aspects of epidemiology there are bound to be many statements that are open to criticism, but the author is too well versed in his subject to be dogmatic, and ably discusses the opinions of the authorities he quotes. There is indeed all too little of the author in the book, and one wishes that he would give more of his personal opinions on the fascinating problems he presents so lucidly.

The subject is one that requires great courage to tackle, and there is no doubt that Dr. McDougall has done a great service in collecting and annotating the vast number of references that form the foundation of the book. His plea for the adoption of some standardized form of recording information on tuberculosis should receive the prompt consideration of governments, local authorities, and other agencies interested in the eradication of the disease.

FREDERICK HEAF.

PARASITOLOGY

Précis de Parasitologie. By E. Brumpt. Volumes 1 and 2. Sixth edition. (Pp. 2,138, 1,305 figures, 4 plates (2 in colour). 7,700 francs.) Paris: Masson. 1949.

Human Helminthology. By E. C. Faust, M.A., Ph.D. Third edition. (Pp. 744; 313 engravings. £2 10s.) London: Henry Kimpton. 1949.

Since the first appearance of Brumpt's *Précis of Parasitology* forty years ago its reputation and dimensions have been steadily increasing. It now occupies a position of unique importance, and even affection, among parasitologists. There is a quality about this work, apart from its technical excellence, which makes it a favourite with the habitual user. Instead of being merely a store-house of scientific data, a picture-gallery of parasites and patients, it seems to reflect the enthusiasm and personality of its distinguished author. This impression is conveyed not only in the vivid and easily readable text but in the abundant illustrations. Many of these are by the author, the fruits of his own researches, his wide experience and travel, and his intense interest in the subject.

It has been suggested that the word *Précis* might well be replaced by *Traité*. It would indeed be a more appropriate term for this impressive work of two volumes and over 2,000 pages on four distinct branches of parasitology. The protozoologist, the helminthologist, the entomologist, and the mycologist will welcome this new edition, which is enhanced by the accounts of progress in their respective fields during the period 1936–49. It maintains the customary high standard of accuracy and presentation and contains more than 200 additional illustrations.

The third edition of Faust's *Human Helminthology*, though some sixty pages shorter than its predecessor, conveys no impression of incompleteness. Much additional matter is included, and the reduction has been achieved by the judicious use of smaller type for certain kinds of text. Research during the past decade has contributed much to the knowledge of certain important aspects of human helminthology; all this new material is incorporated, and the topicality of the work is exemplified by the mention of the comparatively recent discovery of "retrofection" in human infections with threadworm.

This textbook is intended to be "equally helpful to the physician, the sanitary officer and the student of

parasitology." The needs of the physician and sanitary officer are generously fulfilled, and the student of parasitology, whether engaged in field work or in the laboratory, will have frequent recourse to its pages. He may be somewhat perturbed, however, by occasional lapses in the text and illustrations—for example, the designation of *Aëdes aegypti* as an important vector of bancroftian filariasis (p. 509); the several-days-old larva of *Ascaris* depicted in fig. 247 as eight hours old and referred to in the text as newly hatched; and the extensive invasion of Cape Colony by *S. haematobium* (fig. 18).

The format follows that of the previous editions. Section I deals with the scope of helminthology. In sections II–V, which occupy about two-thirds of the book, the helminths of man are described individually in great detail, with appropriate emphasis on those species of medical importance. Section VI, on the leeches injurious to man, is a new feature. Section VII is mainly concerned with laboratory technique, anthelmintics, and intermediate and reservoir hosts; it also contains a useful classified list of references.

J. J. C. BUCKLEY.

THE PENICILLIA

A Manual of the Penicillia. By Kenneth B. Raper and Charles Thom. With the technical assistance of and illustrations by Dorothy I. Fennel. (Pp. 875; 172 figures, 10 coloured plates. £4 11s. 6d.) London: Baillière, Tindall and Cox. 1949.

In 1930 Charles Thom, the American mycologist, published his well-known monograph on the Penicillia, a valuable work for the mycological specialist. In the true tradition of a monographer Thom gave a faithful and designedly not very critical presentation of all described species of Penicillia. In the intervening years, with the rapid advances made in mycological chemistry and in the development of penicillin and other antibiotics, the need was felt for an authoritative text enabling non-specialists to identify broadly any interesting species of Penicillia. This manual by Thom and his former pupil and present colleague, Kenneth B. Raper, admirably satisfies this need.

The book is based on the careful comparative examination of laboratory cultures of over 4,000 strains of Penicillia, and it emphasizes the concept of series—that is, groups of species having fairly consistent morphology and usually showing related biochemical activities. Within each series, recognized species, now reduced to 142 in number, are arranged in what is considered to be a logical sequence. All other strains, previously regarded as valid species, are discarded, but a check list of them is appended. Full descriptions of all accepted species are given, with clear keys—including a diagrammatic key to major subdivisions and series, a general key to the different series, and a detailed key to the separate species in each series.

Detailed descriptions of species occupy the greater part of the book, but there are also useful chapters on the cultivation and preservation of Penicillia and on penicillin, and comprehensive bibliographies. At the end of each description of a series of Penicillia is a valuable summary of available information on the physiology, biochemistry, pathogenicity, and other characteristics of members of the series.

The manual is lavishly illustrated, and contains ten coloured plates. It is indispensable to microbiologists, bacteriologists, and biochemists interested in Penicillia, since it is unquestionably the finest publication on the subject in any language.

HAROLD RAISTRICK.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

Galen on Jews and Christians. By R. Walzer. (Pp. 101. 10s. 6d.) London: Geoffrey Cumberlege. 1949.

Woman and Happy Marriage. By A. Worsley, M.B., Ch.B.Birm. (Pp. 318. 21s.) Birmingham: Cornish. 1949.

Rehabilitation Re-education and Remedial Exercises. By O. P. Guthrie Smith, M.B.E., F.C.S.P. Foreword by Lord Horder. 2nd ed. (Pp. 456. 25s.) London: Baillière, Tindall and Cox. 1949.

The Origin of Medical Terms. By H. A. Skinner, M.B., F.R.C.S.Can. (Pp. 379. 54s.) London: Baillière, Tindall and Cox. 1949.

Problems of Bisexuality as Reflected in Circumcision. By H. Nunberg. (Pp. 83. 10s.) London: Imago Publishing Company. 1949.

The Common Infectious Diseases. By H. S. Banks, F.R.C.P., D.P.H. (Pp. 354. 21s.) London: Edward Arnold. 1949.

The Life and Works of Edgar Allan Poe. By M. Bonaparte. Foreword by S. Freud. Translated by J. Rodker. (Pp. 749. 35s.) London: Imago Publishing Company. 1949.

The Psychoanalytic Study of the Child. Edited by A. Freud, W. Hoffer, M.D., Ph.D., and others. Vol. 3/4. (Pp. 493. 35s.) London: Imago Publishing Company. 1949.

Epidemiology in Country Practice. By W. N. Pickles, M.D. Preface by Major Greenwood, F.R.S. Re-issued 1949. (Pp. 112. 10s. 6d.) Bristol: John Wright. London: Simpkin Marshall. 1949.

Pennies for Health. By A. T. Page. (Pp. 91. 13s. 3d.) Bristol: The British Hospitals Contributory Schemes Association (1948). 1949.

A Text-book of Midwifery for Students and Practitioners. By R. W. Johnstone, C.B.E., F.R.C.O.G. 14th ed. Revised in collaboration with R. J. Kellar, M.B.E., F.R.C.O.G. (Pp. 584. 30s.) London: Adam and Charles Black. 1949.

Guide to Diagnosis of Occupational Diseases. (Pp. 317. $1.) Published by Authority of the Hon. Paul Martin, Minister of National Health and Welfare. Ottawa, Canada. 1949.

Introduction to Physical Biochemistry. By J. M. Johlin, Ph.D., D.Sc. 2nd ed. (Pp. 246. 27s. 6d.) London: Cassell. 1949.

Applied Anatomy and Kinesiology. By W. P. Bowen, M.S. 6th ed. revised by H. A. Stone, M.S. (Pp. 390. 33s.) London: Henry Kimpton. 1949.

Physiology in Health and Disease. By C. J. Wiggers, M.D., F.A.C.P. 5th ed. (Pp. 1,242. 70s.) London: Henry Kimpton. 1949.

The Vertebrate Body. By A. S. Romer. (Pp. 643. 27s. 6d.) London and Philadelphia: Saunders. 1949.

Money, Medicine and the Masses. By A. D. G. Blanc, M.B., A.N.Z.I.C. (Pp. 193. 10s. 6d.) Wellington, New Zealand: Reed. 1949.

Selective Partial Ablation of the Frontal Cortex. By the Columbia-Greystone Associates. Edited by F. A. Mettler, M.D., Ph.D. (Pp. 517. $10.) New York: Paul B. Hoeber. 1949.

Handbook of Medical Management. By M. Chatton, A.B., M.D., and others. (Pp. 476. $3.) Palo Alto, Cal.: University Medical Publishers. 1949.

The Occurrence of Post Infectious Nervous Complications and Allied Disorders in Sweden. By F. Möller. (Pp. 58. No price.) Lund: Hakan Ohlssons Boktryckeri. 1949.

Unipolar Lead Electrocardiography. By E. Goldberger, B.S., M.D. 2nd ed. (Pp. 392. 52s. 6d.) London: Henry Kimpton. 1949.

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BIRTH CONTROL

The Royal Commission on Population, whose report was published last year,[1] concluded that before it could deal fully and satisfactorily with its subject it must seek for more evidence than was then available on the use of birth control in this country. Its Biological and Medical Committee had, in fact, advised that it was essential that the Commission should be able to give authoritative answers to such questions as: How extensively, how effectively, by what means, and for what ends is birth control used by the different social classes? Of what degree of importance to-day are involuntary infertility and abortion used as a method of birth prevention? How many pregnancies are "unplanned," how many children "unwanted"? This was clearly no mean task, but, nothing daunted, the Commission sought the help of the Royal College of Obstetricians and Gynaecologists, who agreed to plan and supervise a large-scale inquiry, the results of which have now been published.[2]

The director of the inquiry and author of this report, Dr. E. Lewis-Faning, now statistician to the department of preventive medicine, Welsh National School of Medicine, is clearly well aware of the difficulties of his task and the inevitable defects in his statistics. The first fundamental problem was to choose, and approach successfully on such very intimate matters, a representative cross-section of all women, for without this none of the necessary generalizations from the sample to the whole population could legitimately be made. This was hardly an inquiry which would lend itself to the social-survey method of a visit to every "*n*th" house. In fact the committee supervising the inquiry was convinced that qualified members of the medical profession, and preferably those in doctor–patient relationship to the women, could alone act as suitable interviewers. On the other hand, to allow the doctor to interview mainly women who came to him through reasons connected with maternity—obviously the easiest mode of approach—would have given a grossly biased sample composed of the more fertile and of those about to give birth. It was concluded that the only hope of obtaining a reasonably good cross-section would be through the women patients in the general wards of hospitals, excluding those who were there through maternity. In fact, of the 11,078 questionaries finally completed only a small proportion, 2,821, actually fell within this definition and could be used. The addition of another 460 histories acquired by other means (one hundred from the Peckham Health Centre) gave a total of 3,281 women who were not under medical care for reasons connected with maternity. It is upon this rather small number that the present report is based. Furthermore, it must be noted that 42% of these women belonged to the London area and 22% to Glasgow, or, in other words, two-thirds of the questionaries came from two highly urbanized centres which contain only one-fifth of the married women of the country. The report considers that this is unlikely to bias the results, but that is, obviously, a matter of opinion. The group is also biased, as would be expected, on the side of the less well-to-do, while it had a distinctly higher than average fertility—a feature which might imply an above-average use of birth control, since the more fertile will need to adopt it more frequently than the less fertile.

The second fundamental difficulty lies in the fact that extremely detailed questions have to be answered almost wholly from memory by both intelligent and unintelligent women. Broad issues may perhaps be clarified reasonably well on such a basis, but clearly the records must not be read too literally. How well remembered, for instance, by the woman married twenty years ago is the date of that miscarriage and the point in pregnancy at which it occurred? For how long was coitus "uncontrolled" before that (or any other) pregnancy began? Does she really recall the answers with such accuracy? From his own close study of the returns and such checks as were possible Dr. Lewis-Faning gained a "very favourable impression" of the "general truthfulness and accuracy" of the replies. A good deal hangs upon that impression, and factual evidence to support it would have been useful. It will be seen, too, that he is impressed by the truthfulness of the women: this is also clearly important, both as it affects the answers on their use of birth control and, *a fortiori*, in relation to induced abortions. Finally there lies the difficulty of selective factors imposed by the women themselves. Offhand it might be said that "non-controllers" would have, on the average, larger families than the "controllers." But this is not so; their families may not be very much larger, and they might even be smaller. The reason is that the "non-controllers" will include the sterile and relatively infertile couples who have no need of "outside" assistance, while the "controllers" may have acquired the very best evidence of their fertility and be acting upon it. A "controlled" (and quite impossible) experiment could give a very different answer. Thus

[1] See leading article in the *British Medical Journal*, 1949, 1, 1127.
[2] Papers of the Royal Commission on Population, Vol. 1. *Family Limitation and its Influence on Human Fertility During the Past Fifty Years*, 1949, London: H.M.S.O.

the difficulty has to be continually faced of distinguishing the cart from the horse, the cause from the effect.

Such are the many provisions and qualifications that have to be borne in mind while studying Dr. Lewis-Faning's 127 tables. He must, indeed, have given the Royal Commission much to reflect upon, much as a basis for broad conclusions, but he could hardly have been expected to provide it with an "authoritative answer." Taking, however, the Commission's questions in turn, the frequency of the use of birth control is shown by the admission of its adoption, at some time of their lives and by some method, by 56% of the 3,281 women (birth control as defined here includes, it should be noted, abstinence for more than six months, use of the "safe period," and coitus interruptus). This, Dr. Lewis-Faning thinks, is a slight understatement, due to some concealment by a small proportion of the women. Division of the group by date of marriage gives the following type of contrast: of women married during 1910–19 (the sample married earlier is small and of doubtful value) 8% used birth control at marriage, 22% adopted it subsequently during the first five years of married life, and 11% adopted it later on, a total of 41%. With women married in the years immediately preceding the second world war (1935–9) the 8% at marriage has grown to 28, the 22% in the first five years has become 32, while the "later on" ratio is still incomplete but has reached 7%, giving a total of 67%. Turning to methods, 9% of the women married in 1910–19 had at some time used "appliances," and 31% had limited themselves to coitus interruptus. The corresponding figures for the brides of a quarter of a century later are 37% using appliances and 29% coitus interruptus. The sheath was, and remains, the most popular method.

From the occupations of the husbands recorded on the forms the women could be allocated to one of three social classes. The first comprised the Registrar-General's Classes 1 and 2 (professional and intermediate between professional and skilled workmen) and the skilled non-manual workers of Class 3 (skilled workmen); the second comprised the skilled manual workers of Class 3; and the third comprised Classes 4 and 5 (intermediate between skilled and unskilled workmen and the unskilled). As would be expected the whole sample of women was deficient in the top social groups, but even within the three groups as here constructed there was recorded considerably more birth control in the higher classes except in the years 1920 to 1935, when there was remarkably little difference—a phenomenon for which no adequate explanation is apparent or offered. As would be anticipated, coitus interruptus increases and appliances decrease as one descends the social scale. In all classes appliances have been replacing coitus interruptus in the last forty years.

In spite of this admitted use of birth control (in the widest sense) 7% of the women married before 1935 said that they had had one unwanted child, 4% said that they had had two, and 3% said that they had had three or more. In reply to a question about whether the bride and bridegroom had planned the number of children they would have, affirmative answers for the most recent period (1940–6 marriages) came from 58% of the report's social class 1, 46% of its class 2, and 40% of its class 3—an overall value of 47%. The report appears to find this a somewhat surprisingly small figure, while some might think it revealed a remarkable, and perhaps a slightly unattractive, degree of forethought, even though the "sights" may well be raised or lowered subsequently. The reasons given for using birth control are clearly open to grave suspicion, as Dr. Lewis-Faning observes. For what the answers are worth, the most fashionable reply for 1935–9 marriages was, "Could not afford more children"—which is open to many interpretations. This was followed, in order, by spacing out of pregnancies, uncertainty due to war, health, housing. Few suggested that ties or losses of freedom were a matter of concern. But all this needs more than a grain of salt. Lastly, the data suggest a figure of about 7–8% for involuntary infertility, while induced abortions are calculated to be 2% of all pregnancies and about 1 in 6 of all abortions. The report admits, as indeed seems likely, that all abortions were not revealed and recorded and that these results are doubtless much below the truth.

The Royal Commission concluded that the fall in the size of family is due to deliberate family limitation, and most persons would agree with them. The present report shows clearly the increase in this century in the use of birth control—at least broadly, if the figures are not accepted as more than rough guides. A curious point is the very low rate of birth control (as admitted) in the women married before 1910. Only 15% said that they had ever used birth control, and this was mostly by coitus interruptus. If this be true, why did the birth rate start on its dramatic decline early in the 1870's and fall so considerably in the last thirty years of the nineteenth century? Coitus interruptus could be no prerogative of the late Victorian, though the will to use it might have been.

THE THYMUS IN MYASTHENIA GRAVIS

There is no doubt that abnormalities of the thymus are significant in myasthenia gravis. Castleman and Norris,[1] who recently surveyed the literature and added detailed reports of their own 35 specimens, found that thymomas occurred in some 15% of cases. They also gave weight to the observation that lymphoid "germinal centres," often numerous, could be seen in 75% of the glands in which no thymoma was present. Though a few germinal centres have also been observed in the thymus glands of

some cases of thyrotoxicosis, acromegaly, and Addison's disease, they conclude that the presence in the thymus of germinal centres in large numbers or in smaller numbers when there is thymic involution "almost certainly means myasthenia gravis." In spite of the importance of abnormality of the thymus in myasthenia, in many patients it is normal, and it is worth restating the fact that the onset of the disease may be unconnected with any abnormality of the gland.

Thymectomy has been carried out, as we have previously mentioned,[2] on the assumption that the thymus might be the source of a curare-like substance —on the basis of what might be called "thymotoxicosis." Attempts to reproduce the symptoms of myasthenia by injecting extracts of normal and abnormal glands have so far failed. Another approach, the study of the results of a large number of thymectomies, has been in progress for eight years. We recently published Mr. Geoffrey Keynes's observations on his series of 155 operations,[3] and a detailed account of 36 patients by Dr. Henry Viets, of Boston, will be found in this issue. Both writers record a number of striking successes, often amounting to complete remission of symptoms, but both have had unaccountable failures. Mortality was about the same in the two series, heaviest at first and improving with greater experience in surgical technique and medical management during the operative period until the extremely low figure of 5% has been reached. Keynes, using a simple nomenclature, gives his results in percentages: patients with complete remissions, 32.5; with residual symptoms, 33; some improvement, 25.8; and total failures, 8.3. It is not possible to apply this classification strictly to Viets's results, but his figures appear less favourable—for instance, only 11% of his patients (Cases 3, 15, 19, and 28) would qualify for inclusion in Keynes's first group). On the other hand, Viets gives the most remarkable result reported in detail so far. His third patient, a woman of 32, had suffered for 10 years at the time of the operation. Her symptoms were totally relieved within a fortnight, and she is still 'cured" seven years later. It seems that the coincidence of a spontaneous remission can be safely excluded in this instance. Both authors have failed to find any relation between the condition of the thymus and the post-operative course. They agree that a thymoma is generally of ill omen, and yet Viets's Case 15, relieved of such a tumour, was apparently cured within a few days and remains well two years later. Viets remarks on the presence of numerous lymphoid germinal centres in the glands removed from some of his most successful cases, but he admits failure in the patient whose thymus showed this feature to the greatest degree.

Patients who improve within a short time of the operation, after years of unremitting illness, offer the most convincing argument in favour of thymectomy. Improvement such as was observed in Viets's Case 21. who remained unchanged for a whole year after operation and then slowly improved, can hardly be credited to surgery. There is no evidence that drug treatment alone would have done less for such a patient. Viets affirms that "good remissions may often be provoked by judicious treatment with neostigmine alone. Some are . . . equal to those seen after thymectomy." It is impossible to cite any other example of a disease in which the results of an operation, in comparable circumstances, might be delayed for months: since spontaneous remissions are so frequent in myasthenia, such claims for thymectomy are specially difficult to allow. The dosage of neostigmine prescribed by Viets will surprise those who have been over-cautious in the use of this drug. Most instances of resistance to the drug, he says, are examples of under-dosage. One of his patients has needed as many as 57 tablets (15 mg. each) in 24 hours, and she has taken 32 daily for years. During and after the operation—over a period of about eight hours—he gives the drug intravenously from a drip bottle containing 10–15 mg. in 1,500 ml. His statement that neostigmine does not lose its efficacy over the years is also reassuring.

There is probably little more to be learned from further experience of thymectomy. Perhaps new light will come from the biochemist or the endocrinologist. For instance, Selye[4] has recently observed that in his laboratory animals desoxycortisone causes thymic hypertrophy, while gluco-corticoids, such as cortisone, exert an opposite effect. Meanwhile those concerned with the selection of patients for thymectomy might follow Viets's advice. He warns against hurried operation in desperate cases and considers, rightly, that patients with few symptoms, those responding steadily to neostigmine, and those over 40 years of age are not best treated by surgery.

RESISTANCE TO PROGUANIL

The unpredictable adaptability of living creatures which excites the wonder and admiration of the philosopher is apt to give rise to other and less pious thoughts in the mind of the chemotherapist. Too often has his apparently ideal remedy been by-passed by the emergence of a resistant strain of the micro-organism to which it was at first lethal. The generally accepted explanation of this phenomenon is a simple one: among the many millions of organisms which are present in every infection there occurs an occasional variant which, either by the possession or by the lack of some special character, is so constituted as to be insusceptible to the action of

[1] *Medicine*, Baltimore, 1949, **28**, 27.
[2] *British Medical Journal*, 1949, **2**, 639.
[3] Ibid., 1949, **2**, 611.
[4] Ibid., 1949, **2**, 1129.

the drug; while its less fortunate relatives are being killed off the variant multiplies and in time replaces them, thus establishing a resistant race. For reasons which are not yet fully understood the faculty of provoking resistance is confined to certain types of drug. It is, for example, well known in relation to tryparsamide, the sulphonamides, and certain antibiotics. Fortunately it is not a characteristic of most antimalarial drugs, though the experience of Fairley and his colleagues[1] with the Aitaipe-Wewak strain of *Plasmodium falciparum* suggests that resistance to mepacrine may occasionally develop. To this rule proguanil ("paludrine") is an exception. In the last few years proguanil-resistant strains of *P. gallinaceum*,[2,3] *P. lophurae*,[4] *P. cynomolgi*,[5] and finally *P. vivax*[6] and *P. falciparum*[7] have been produced experimentally and, with one exception, have been transmitted by the insect vector without losing this property. This ominous series of laboratory findings has been followed all too soon by evidence which suggests that some similar process can take place in natural conditions. From Africa have come complaints of a "break through" of malarial infection in individuals who claimed to have taken a suppressive dose of proguanil with unfailing regularity. Covell and his coworkers,[8] in a series of carefully controlled experiments in patients infected with a West African strain of *P. falciparum*, found that proguanil alone failed to effect a radical cure. In India Chaudhuri[9] had a similar experience. These findings do not of course furnish any evidence of drug resistance, but they do indicate that different strains of parasites may have different degrees of susceptibility to proguanil.

In July, 1949, Drs. J. W. Field and J. F. B. Edeson[10] reported briefly from Malaya observations which have been extended and are given in more detail elsewhere in this issue. Since 1945 proguanil has been used for malaria suppression in certain rubber estates in Malaya. The few cases of overt malaria which occurred in this area were, until 1948, treated successfully with a single dose of proguanil. In 1949 a change became obvious, and one out of every four cases, treated with two or three times the dose previously given, failed to respond. Five cases of *P. falciparum* infection are recorded in which repeated therapeutic courses of proguanil did not effect cure. There seems little doubt that this disappointing experience is attributable to a proguanil-resistant strain of the parasite brought into being by the inefficient use of proguanil for suppression. Before accepting this conclusion as final, however, it would be advisable to bring the strain to Britain and have its properties tested under controlled experimental conditions.

The implication of these findings, if the explanation put forward proves to be correct, are far reaching and important. Edeson and Field admit that the present position is not serious, but fear, with good reason, that it may become progressively worse. Resistance is most likely to develop when relatively heavy blood infections are exposed to the action of sublethal doses of the drug, a state of affairs which may often arise during casual and irregular suppression, particularly in a hyperendemic area. Those with experience in enforcing preventive measures against malaria know how difficult it is to ensure that suppressive drugs are taken regularly, and in this case the shortcomings of the few can become a menace to the entire community. Thus, unless proguanil suppression can be carried out efficiently, it may be necessary to make use of some other compound which does not provoke resistance, such as mepacrine or chloroquine or, as Edeson and Field suggest, to alternate proguanil with these other drugs. The problem is a difficult one and calls for much careful consideration.

1 *Trans. R. Soc. trop. Med. Hyg.*, 1946, **40**, 229.
2 Bishop, Ann, and Birkett, Betty, *Parasitology*, 1948, **39**, 125.
3 Williamson, J., and Lourie, E. M., *Ann trop. Med Parasit.*, 1947, **41**, 278.
4 Thompson, P. E., *et al.*, *J. Infect. Dis.*, 1948, **83**, 250.
5 Hawking, F., and Perry, W. L. M., *Lancet*, 1948, **2**, 850.
6 Seaton, D. R., and Lourie, E. M., ibid., 1949, **1**, 394.
7 Seaton, D. R., and Adams, A. R. D., ibid., 1949, **2**, 323.
8 Covell, G., Nicol, W. D., Shute, P. G., and Maryon, M., *British Medical Journal*, 1949, **1**, 88.
9 *Indian med. Gaz.*, 1948, **83**, 225.
10 *Trans. R. Soc. trop. Med. Hyg.*, 1949, **43**, 233.

TREATMENT OF SCHIZOPHRENIA

The results obtained in schizophrenia by different methods of treatment have been investigated by Rees.[1] His material consisted of three groups of patients, 160 in all, who had been treated by one or more of the three methods—electronarcosis, deep insulin treatment, and electric convulsion therapy. About 200 courses of treatment were given, and the patients were followed up for six months to three years after the cessation of treatment. Much detailed information was obtained about each patient; it was classified into 300 items and analysed statistically by means of punched cards and the Hollerith sorting machine. Rees showed that the three groups of patients were clinically comparable and did not differ from each other in sex and age distribution and in other ways which might be significant prognostically. In two respects, however, the outlook for the patients treated by electronarcosis was better than for the others—they tended more than the others to have paranoid symptoms, and a higher proportion of them had been ill for a year or less. The patients treated with insulin, on the other hand, had the worst expectations, for this group contained the highest proportion of patients with a prolonged illness. Nevertheless the insulin-treated patients fared much better than the others, for 29% had full remissions, compared with only 8% in the two groups treated by electrical methods. The recoveries were well maintained and were more lasting after insulin than the remissions obtained by other methods. The highest relapse rate occurred among patients treated by E.C.T. Fifty-five per cent of the patients whose illness had lasted less than a year recovered after insulin treatment, while for the two electrical methods the figures were 15% and 16%. Among the patients with an exceptionally poor prognosis there were

1 *J. ment. Sci.*, 1949, **95**, 625.

two recoveries after treatment with insulin, but not a single recovery after treatment by the other methods. No patient was seen who benefited from electrical treatment after insulin had failed, but five patients in whom electronarcosis had failed and sixteen in whom E.C.T. had failed recovered after insulin treatment or were considerably improved. Insulin treatment was the only method of the three which could be shown to give a higher remission rate than that observed in patients provided with simple hospital care.

The evidence that this study provides about the usefulness in schizophrenia of the recently introduced method of electronarcosis is of importance. It is clear that expectations must not be set high. It may well be that it has its place in the treatment of individual patients, just as E.C.T. also has its place, but both treatments appear to be of symptomatic value only, and it cannot be expected that either will alter the course of the disease or affect the prognosis in any radical way. Improvement is frequently obtained, but relapse is likely, and actual remissions are not more frequent than are known to occur spontaneously. The outlook with insulin treatment is entirely different. With this method recoveries do seem to occur which otherwise would not. Rees's figures show that if treatment is given early enough 76% of patients have a full remission or recover sufficiently to be discharged from hospital. Exactly the same findings have been made in earlier studies, and they can now be regarded as established. The most obvious lesson to be learned is that wherever acutely psychotic patients are being treated insulin therapy should be available. It should not be thought that duty to the schizophrenic patient can be discharged merely by the provision of facilities for the much simpler and easier electrical methods. Rees's findings should encourage research. If insulin-coma therapy does sometimes cure it must be because it affects the basic pathological disorder. How, when, and why it should do so needs further investigation.

PLANNING CONSULTANT SERVICES

Offering guidance rather than peremptory instructions to regional hospital boards, the Ministry of Health has performed a useful service in publishing a memorandum,[1] circulated a year ago to hospital boards, on the planning and development of the consultant services in England and Wales. It is summarized on another page. The Ministry clearly desires a considerable expansion of the consultant services, and its memorandum should be of assistance not only to those administrators, medical and lay, whose duty is to plan these developments, but also to the practitioners who will run the service. Registrars in particular will find many suggestions on which branches of medicine and surgery are likely to offer the most openings. Just as general practice is "under-doctored" in some areas, so is consultant practice "under-doctored" in some specialties, and is likely to remain so for some time, whereas openings will be fewer in the more popular specialties. Of radiodiagnosis, for example, the memorandum says that "there are not enough consultants in this field available at the present time," and "a great expansion . . . will be necessary during the next few years." Physical medicine also lacks sufficient consultants, as do dermatology, anaesthesia, and some other specialties.

The theme running through the document is that melody whose principal notes are co-operation, co-ordination, and collaboration. Worried by medicine's fissile development into an ever-increasing number of specialties, the Ministry is to be commended for advocating small units, more or less self-contained, instead of trying to steer the whole machine from Whitehall. Much will depend on the vigilance and criticism of individual doctors scattered throughout the country, and some of the Ministry's ideas will need to be modified to suit local conditions—a possibility that does not seem to frighten the Ministry unduly.

[1] *National Health Service: The Development of Consultant Service* (H.M.S.O., 9d.).

PATHOGENIC FUNGI

It is not until the rank of an organism is decided that nomenclature plays a hand, and if this is not clearly grasped nomenclature and taxonomy may be mixed up. Moreover, nomenclature has no part in the problems concerned with whether a species is a "good species," or whether a genus is too inclusive or too exclusive, or, further, whether a species belongs to one genus rather than another. These distinctions are clearly stated in a Medical Research Council Memorandum on the nomenclature of fungi pathogenic to man and animals.[1] The causal agent of favus is taken as an example. The name *Trichophyton schoenleini* is used for this fungus by many authors, *Achorion schoenleini* by others. (The specific epithets throughout are printed without capitals, which is contrary to a recommendation of the International Rules of Botanical Nomenclature, though in accordance with those of zoology.) As nomenclature both names are correct; taxonomically it has to be decided whether *Achorion* is a sound genus, and, if it is, whether this species finds its proper place in it. The Medical Mycology Committee has given a lead throughout on this cognate matter, deciding on one name and so making the Memorandum much more useful. "Medical mycology is hampered by the multiplicity of names that have been given to fungi of medical importance." Sixty-five specimens of fungi have been recorded as pathogenic to man in the British Isles, but under 150 names—a number which would need to be considerably augmented if those used abroad were included.

Medical mycology has been much neglected in this country, and this has probably been due as much to the multiplicity of names used by those few who have made contributions as to the fact that some of the mycology was so unscientific that the names signified nothing. The Memorandum, with its clear opinions on what are ascertained facts and its facing of some unsolved problems in a scientific manner, will doubtless do much to clear away the rubbish which has brought this important branch of medical pathology into derision. Only the thirty-four commoner fungi recorded as pathogenic to man and to animals have been listed, with six non-indigenous species. The commoner mycoses of animals are also included, because a number of fungi affecting man are primarily parasites of the higher animals, and in the hope that the usefulness of the list will be increased thereby. The scheme

[1] *Nomenclature of Fungi Pathogenic to Man and Animals.* Medical Research Council Memorandum No. 23, 1949, H.M.S.O., London.

followed is to give one disease name for each fungus, but since a number of diseases or disease complexes are caused by several fungi several names have had to be given for these. With increased precision of diagnosis the number of disease complexes should diminish.

The names of fungi and diseases are given in alphabetical order. The accepted fungal names are in semi-bold italic type, those rejected in light italic. The recommended names of diseases are in small capitals, others in lower-case roman type. The accepted names for diseases are also given in a second column opposite the name of the causal fungus. Synonyms are given under the accepted names of the fungi. The generic name *Candida* is selected for the causal organism of moniliasis, and *Cryptococcus*, though tentatively, for that of torulosis. Reasons for these decisions are explained in notes. Extended notes are also given under *Actinomyces israeli*, *Microsporum canis*, and *Trichophyton sulphureum*, and an explanatory sentence under a few others. The attribution of *Trichophyton sulphureum* to Colcott Fox is not strictly correct. Sabouraud has kindly suggested to me the name *T. sulphureum* " obviously denotes that the name is Sabouraud's. 'Sabouraud ex Colcott Fox" is the accepted method of denoting this. Sabouraud apparently disliked the "*flavum*" used by Fox; he had previously altered the *flavum* of Bodin to *cerebriforme*.

RAYNAUD'S PHENOMENON FROM VIBRATION

It has been known for nearly forty years that some vibrating tools can induce attacks of pallor and numbness in the fingers of the operators, but it was formerly thought that the cold exhaust gases of pneumatic tools were the cause. Vibration itself is now incriminated, for the condition was observed among those engaged in cutting and polishing metal with flexible-drive machines during the recent war. Agate's[1] study reveals that almost 70% of the men working with these tools developed the trouble in greater or lesser degree. The symptoms of coldness and numbness, accompanied by pallor and cyanosis, developed first in the middle and ring fingers of the left hand in the majority of cases. These fingers, which the operator uses to press the tool against the work, are most subject to vibration. In many the trouble spread to involve all the fingers of both hands, including the thumbs in the worst instances. The attacks come on after exposure of the hands or body to cold, and in the worst cases may persist until warmth can be applied. Indeed, one case at least has been seen where both hands were of a permanent leaden hue and all use had been completely lost. A disquieting feature is that Agate found on follow-up inquiry that more than one-third of the men considered that the condition had become worse, though they had been away from work with vibrating tools for up to two and a half years.

Treatment is unsatisfactory. Telford and his co-workers[2] reported that sympathectomy was of some benefit in one case, though not a cure, and since then other patients have obtained no benefit whatever from the operation. It is apparent that in these cases at least the mechanism of the attacks of pallor and coldness is almost entirely local and is not dependent on sympathetic activity. Freedom from attack can be secured only by the avoidance of cold, an unattainable ideal in this country. The severity of the disablement varies greatly, the majority of patients being able to continue at work, though some have not been able to resume their pre-war occupation, and many cases of hardship have been reported. That vibration is the cause of the trouble is now accepted, and the relationship is recognized in courts of law, with the result that many compensation claims have been allowed. The condition is one in which the disablement is very difficult to assess, but there is no doubt that it can be an uncomfortable nuisance in everyday life and may seriously restrict the field of employment and the working efficiency of the sufferer.

[1] *Brit. J. industr. Med.*, 1949, **6**, 144.
[2] *Lancet*, 1945, **2**, 359.

HYPERPARATHYROIDISM

Hyperparathyroidism is not a common disorder, but it is one which as a rule can be recognized with certainty and in which surgical treatment rapidly restores the disordered physiological process to normal. Black,[1] in a report from the Mayo Clinic on 63 cases of proved hyperparathyroidism collected over 18 years, has discussed the main points of diagnosis and treatment. The cause was a single adenoma in 56, multiple adenomata in three, and diffuse primary hyperplasia in four cases. The patients' ages varied from 14 to 68 years and the duration of symptoms from one week to 27 years. It is interesting to note that less than 40% of these patients had generalized osteitis fibrosa cystica, while nephrocalcinosis or urinary lithiasis was demonstrable in over 70%. In adults not receiving large doses of vitamin D, the finding of excessive calcium in the blood and urine, with low phosphorus values in the blood and high values in the urine, is pathognomonic, and in such cases the surgeon must be prepared to search the neck and mediastinum until abnormal parathyroid tissue is found. Black advises first a careful search of the cervical and posterior mediastinal regions on both sides. The fact should be borne in mind that 80% of adenomata are found near the lower poles of the thyroid gland. In cases of diffuse primary hyperplasia only a small amount of parathyroid tissue should be left. Should no abnormal tissue be found and subsequent chemical tests indicate continued parathyroid overactivity, an adenoma should be sought in the anterior mediastinum after splitting the sternum. If it is not found there it may lie in the thymus gland, and this should be removed. Black has seen no recurrence after successful operation. About 50% of patients develop tetany after operation, and this is treated with large doses of vitamin D and calcium.

[1] *Surg. Gynec. Obstet.*, 1948, **87**, 172.

FIFTY YEARS OF MEDICINE

Widespread appreciation of the symposium on fifty years of medicine, published in the *Journal* of January 7, has been shown by the many letters received in the editorial office. Several correspondents have suggested that the symposium should be bound separately. It is hoped to republish it later in the year in book form.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

THE DIAGNOSIS OF EARLY PHTHISIS

BY

JAMES L. LIVINGSTONE, M.D., F.R.C.P.

Physician, King's College Hospital and Brompton Hospital

On the early diagnosis of pulmonary tuberculosis depends not only the prognosis of the patient but also the prevention of spread of infection to others. Mass radiography in this and other countries has shown that at least four in every thousand of the apparently healthy young adult population examined for military service are suffering from this disease, and the figure is probably higher in the older age groups.

First Principles

The following principles should be borne in mind.

(1) In every case of phthisis there is a stage in development of the disease when there are no clinical symptoms or signs whatever.

(2) The culture of *Mycobacterium tuberculosis* from sputum, laryngeal swab, or gastric lavage is the most delicate and certain method of diagnosis, and the presence of *M. tuberculosis* indicates "active" disease.

(3) The medical man should not only suspect but take active steps to exclude pulmonary tuberculosis in all contacts with an "open" case, and in patients who have had primary pleurisy (with or without effusion), erythema nodosum, tuberculous adenitis, or other symptoms of a primary lesion.

(4) When one or more cases of "primary" tuberculosis are found in the home, school, office, etc., a careful search should be made for the "open" case who has been acting as a carrier, and who is usually entirely unaware of the diagnosis.

(5) Haemoptysis never comes from a "small vein in the pharynx."

When the first or asymptomatic stage of the disease proceeds to the second or "active" stage the progress is usually slow and insidious over several months, during which time the lung lesion enlarges, cavitates, or spreads. In those fortunate patients whose lesion involves the pleura and causes pain, or breaks through into a bronchus to produce haemoptysis, the diagnosis may be made earlier, for these symptoms take the sufferer to the doctor. In others the lesions may be widespread before toxaemic or pulmonary symptoms are marked. The onset of the second stage may be acute, particularly in young adolescents and in races with a poor resistance to the disease. In such cases there is extensive bronchogenic spread on one or both sides and areas of atelectases from tuberculous disease of the bronchi.

Clinical Examination

In the investigation of a suspected case of early phthisis a careful history must be taken, which should include the family history and the possibility of contact with "open" cases.

Symptoms due to Toxaemia.—(1) Lassitude, particularly in relation to the week-end amusements—e.g., hiking, football, or dancing. (2) Loss of appetite, fullness after meals, and "dyspepsia." (3) Menstrual irregularities, especially oligomenorrhoea. (4) Loss of weight. (5) Abnormal sweating.

Symptoms due to the Pulmonary Disease.—(1) Stained sputum or haemoptysis. (2) A "cold in the head and chest" followed by a persistent productive cough. (3) Vague chest pains. (4) Huskiness. (5) Persistent wheezing on one side. (6) Dyspnoea on active exertion.

Physical Signs.—(1) Pallor, often visible on the palate. (2) Early clubbing of the fingers, as shown by a lilac colour of the nail-bed and shiny thickening of the soft tissues at the base of the nails. (3) Slight diminution of movement and air entry on one side and post-tussive rales in the upper zones, especially posteriorly. (4) Occasionally, unilateral persistent wheezing may indicate tuberculous bronchitis. (5) On laryngoscopy, pallor and swelling of the aryepiglottic folds may be present.

Gross physical signs may be found in more advanced disease, but there is often a remarkable absence of signs in the presence of extensive radiological disease. When a patient has been in bed for a week or two the ausculta ory signs frequently disappear completely.

Radiological Examination

A radiograph of good quality is an essential part of the investigation. If opacities are seen in the middle or lower zones a lateral film is helpful both in showing the anatomy of the lesions and as a standard for future comparison.

It must be remembered, particularly in "contacts," that a minimal lesion may not be visible soon after exposure to infection, and that subsequent films at intervals of one month and then three months may be required in some cases before excluding the diagnosis. An opacity caused by a non-tuberculous infection usually regresses or disappears within one month, whereas a tuberculous lesion resolves more slowly.

The radiological appearances in pulmonary tuberculosis vary according to the type and extent, but four characteristic lesions may be seen in the early case, alone or in combination.

(1) Discrete round foci—Assmann's foci—which are seen in the upper part of the lung fields as sharply defined round or oval shadows from 5 to 25 mm. in diameter; there is no enlargement of the related hilar lymph nodes.

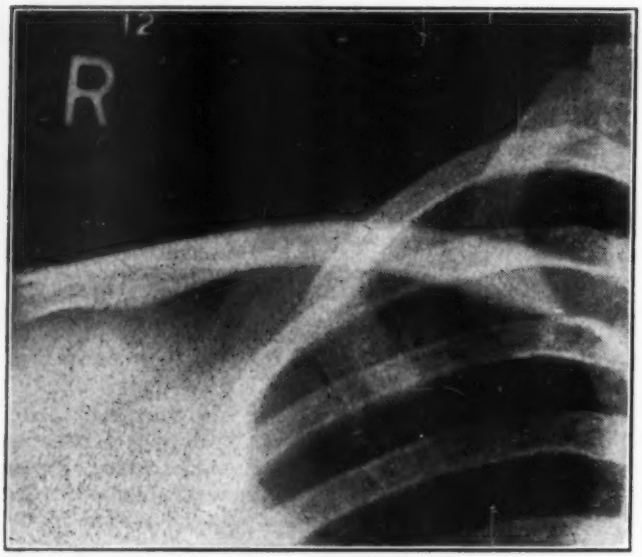
(2) Early infiltration—"Frühinfiltrat." This is shown by fine mottling consisting of a group of comma-shaped opacities, usually in the upper or mid zones.

(3) Cavitation.

(4) Areas of segmental collapse of part of a lobe, usually showing as dense triangular opacities with the base towards the chest wall and along the lines of the interlobar fissures. This appearance is associated with tuberculous disease of the bronchi.

Bacteriological Examination

If sputum is present three separate morning specimens should be examined by stained smear for *M. tuberculosis*. If this examination is negative a twenty-four-hours collection should be sent to the laboratory for culture of



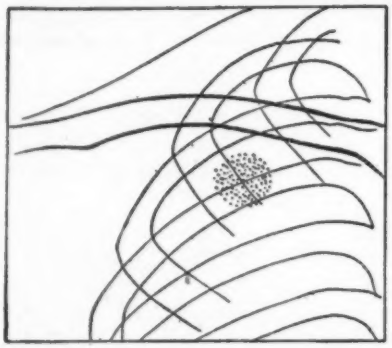


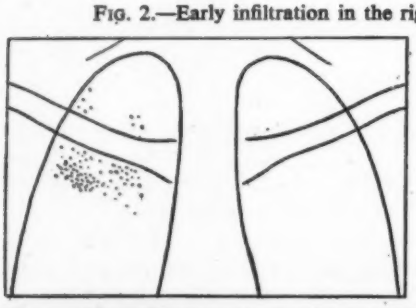
FIG. 1. — Assmann's focus in the right first space, 20 mm. in diameter.

M. tuberculosis. The result will not be known for two to six weeks. Every laboratory should be equipped to undertake culture of this organism.

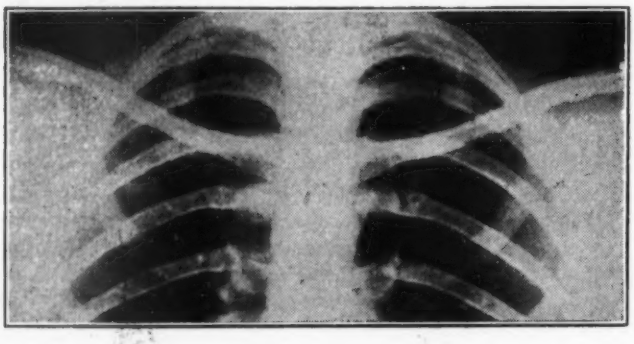
If sputum is not being produced there are two methods of obtaining specimens for culture.

Laryngeal Swab Culture.—The doctor should wear a face-mask. An ordinary throat swab is moistened with normal saline and the wire is bent to about 140 degrees with sterile forceps. The tongue is depressed with a spatula and the patient made to breathe deeply through the mouth; the swab is placed behind the epiglottis and the patient told to cough. If he is unable to do so, the swab is pushed downwards in the direction of the glottis, and this often provokes a cough reflex. The wire is straightened with the forceps and the throat swab replaced in the test-tube. It is advisable to take two laryngeal swabs, which are sent to the laboratory with a request for culture of *M. tuberculosis.*

FIG. 2.—Early infiltration in the right first space.



History. — Female aged 18. Contact with father for two years. No symptoms. Normal temperature and pulse rate and normal B.S.R. Went through routine course of sanatorium treatment for six months with little change in the *x*-ray.



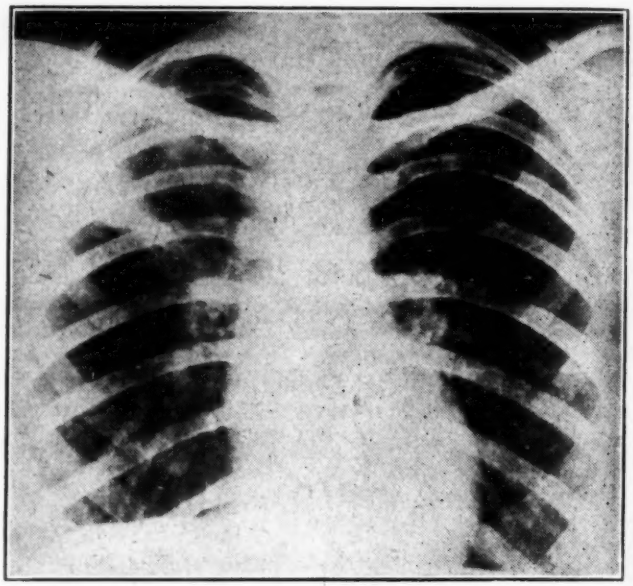


FIG. 3.—Infiltration in right upper and middle zones with atelectasis above the inter-lobar fissure. Early infiltration left mid-zone.

History — Female aged 18. December, 1948: dry cough with occasional greenish sputum. February, 1949: feverish cold with increased cough. March: loss of appetite and nausea. Developed jaundice and was in bed for five weeks. April: cough increased. Temperature 104° F (40° C.). Given sulphonamides. A few days later: haemoptysis. Diagnosed as broncho-pneumonia. Referred to chest clinic in May: sputum positive.

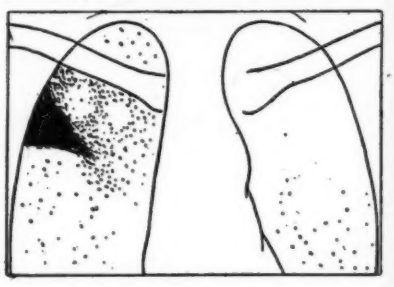
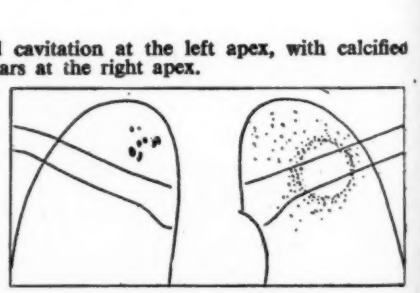
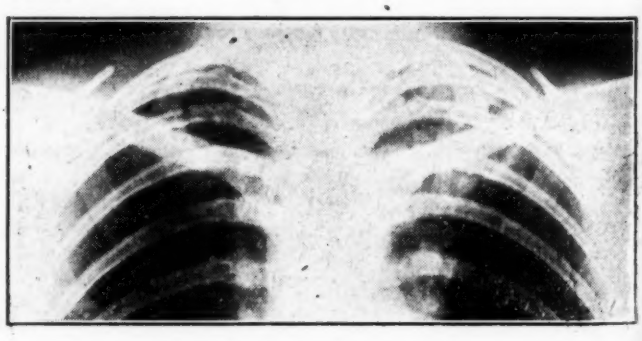


FIG. 4.—Infiltration and cavitation at the left apex, with calcified scars at the right apex.

History. — Female aged 21. 1948: several colds, slight lassitude, and loss of weight. May, 1949: persistent cough with trace of greenish sputum; T.B.-positive. Family history: negative. Contact: *nil.*





Gastric Lavage.—This can be done perfectly well in the patient's home or doctor's surgery by the district nurse or anyone with a little practice. Obviously it is essential to do it soon after the patient wakes in the morning and before anything has been taken by mouth. A Ryle's tube is swallowed, and some 60 ml. of saline introduced into the stomach and sucked back with the syringe. The stomach washings are sent to the laboratory for culture and direct-smear examination. As rubber and glassware are difficult to free from *M. tuberculosis* despite careful cleansing and boiling, it occasionally happens that the direct smear reveals bacilli not obtained from the patient. Confirmation by culture should therefore always be done.

These investigations may prove the diagnosis of "active" pulmonary tuberculosis within a few days or up to a month, and it must be stressed that the presence of bacilli or cavitation indicates "active" disease in spite of the absence of symptoms or signs. During the "active" stage progress of the disease may be rapid and insidious, and the essential treatment is immediate bed rest for at least three months, during which time the physician can assess progress and decide on collapse therapy or other methods of treatment.

Unless strict instructions are given the patients rarely have proper bed rest. By this is meant lying in bed with two pillows and being allowed up for toilet and bath once a day; a chamber-pot or bed-bottle should be used for the bladder. The temperature and pulse rate should be recorded twice daily on a chart.

Is the Lesion "Active" or Not?

The radiograph may show an opacity though the bacteriological findings are negative, and the clinician is then faced with two problems: (i) What is the cause of the lesion? (ii) If it be tuberculous, is the lesion "active," quiescent, or healed?

The following routine should be carried out.

(1) The clinical examination should be repeated and the patient instructed to keep a temperature-and-pulse chart, while leading a normal life, and to record his weight every week.

(2) A further chest film should be taken a month after the first one. If the original opacity has markedly decreased or disappeared it is probably due to a non-tuberculous infection; if stationary or increased in size it is more likely to be due to tuberculosis or neoplasm, and cavitation may take place in both these conditions.

(3) The bacteriological examination should be repeated.

(4) The erythrocyte sedimentation rate may be raised, indicating toxic absorption.

(5) If the radiograph suggests segmental atelectasis a bronchoscopy should be considered.

(6) In patients under 35 years of age a tuberculin-jelly test may be done: if negative, the Mantoux test (1/100 strength O.T.) should be carried out. Should this be negative, it is strong evidence against the lesion being tuberculous.

When these examinations prove negative it may be assumed that the disease is inactive, but the patient should be kept under observation and serial films taken of the chest every three months for at least one year. Any progression, "softening," or cavitation in the lesions is an indication for a further search for *M. tuberculosis*: tomography is helpful when there is doubt whether cavitation is taking place.

In persons over 40 an early bronchial carcinoma may cause dyspnoea, haemoptysis, or other symptoms simulating phthisis. Until the tumour is big enough to block a bronchus the chest radiograph will show no abnormality. This is an important point, and a negative film should not deter the physician from requesting a bronchoscopy when symptoms are suggestive.

The early diagnosis of phthisis calls for the doctor's clinical acumen and knowledge of his patient's living conditions. The investigations required are relatively simple, and should be available to every general practitioner. The culture of secretions for *M. tuberculosis* is a much more delicate method than the direct smears. When bacilli are found the diagnosis of "active" phthisis is established, and the patient should be put to bed forthwith. Further assessment and treatment call for the opinion of a specialist.

ROCKEFELLER FOUNDATION

INTERNATIONAL HEALTH DIVISION

The International Health Division of the Rockefeller Foundation continues its world-wide assistance to public health projects. The report, just issued, for 1948 describes work on the control of malaria, yellow fever, and other virus diseases in both hemispheres.

World-wide interest has been aroused by the anopheline eradication campaign in Sardinia, which is a combined project of the Italian Government and the Foundation. It is described as a comprehensive effort to push forward the frontiers of public health practice. Sardinia has long been highly malarious, and an attempt has been made to eliminate *Anopheles labranchiae* by house-spraying and larvicidal campaigns. By the end of 1948, after a little more than two years' continuous work, considerable progress had been made towards species eradication.

The next phase, which may be continued through 1950, calls for an intensive search for surviving adult mosquitoes and larvae, together with strict control and re-treatment of any zones harbouring them. Effective quarantine measures are also being instituted to guard against the risk of reinfestation from the island of Corsica, ten miles distant, where, incidentally, the French Government is organizing a control project, again with the help of the Foundation. In the house-spraying operations in Sardinia a plant has been used which is capable of turning out 561,000 litres of D.D.T. solutions a month.

Comment is made in the report on the excellent morale of the large labour force enlisted locally. Men from all parts of the island who were engineers, butchers, barbers, soldiers, or casual labourers have come into an organization totally strange to them in method and purpose and have given it their energy and good will to a degree far beyond that demanded by an ordinary conscientious application to duty.

Yellow Fever and Q Fever

The yellow fever research institutes at Lagos, in Nigeria, and at Entebbe, in Uganda, have been hard at work. At Lagos research has been continued on the "scratch vaccine" recently developed by French workers from the dried brains of mice infected with a neurotropic strain of yellow fever virus. The vaccine has been tested out in the little Nigerian town of Kumba, where the entire population of some 4,000 has been successfully vaccinated by the new technique. There were no serious reactions, and an immunity rate to yellow fever of approximately 92% was achieved.

In Uganda research on the epidemiology of yellow fever has continued. The identification of the principal insect vectors and vertebrate hosts has been further studied to determine how the virus is maintained. Other work on yellow fever has been undertaken in Central and South American countries.

Reference is made to Q fever, which was first recognized as a disease affecting man in Queensland, and which is now known to be endemic in widely scattered areas of the world, including

Australia, the United States, Switzerland, and the Mediterranean. The mode of transmission of Q fever to human beings has not been explained satisfactorily. Infected ticks have been found in nature, and in sporadic instances have been responsible for the human disease.

In general, Q fever is associated with slaughter-houses, stockyards, and dairy farms, where it is suspected that workers contract the disease by contact with infected meat and by the inhalation of dust from contaminated hides. Some cases which have been studied in the United States have shown enlargement and tenderness of the liver. Those patients over 25 years of age appear to be more seriously affected than those who are younger. The death rate is only 0.5%, but the morbidity is high. Encouraging results have been obtained with treatment by aureomycin in a few centres.

In addition to its work on these and other problems, the International Health Division is giving extensive support, financially and otherwise, to the application of health measures to State and local services and to public health education in a number of countries.

MEDICAL FOUNDATION OF EPSOM COLLEGE

The Royal Medical Foundation of Epsom College appeals to all members of the medical profession who do not already do so to subscribe to the Foundation, the object of which is to help the families of less fortunate colleagues. The Foundation in 1949 has provided more than £18,500, as follows:

	£
50 ordinary pensions to medical men or their widows ..	1,500
45 Foundation scholarships for boys (educated, clothed, and maintained entirely free of cost)	9,244
13 scholarships for girls	488
Education of 28 boys at reduced fees	1,948
140 pensions and annuities of varying amounts	3,023
Grants towards education of 56 boys and girls	1,843
Grants to medical men, widows, and spinsters	497

In order to maintain this assistance the Foundation has to rely upon the generosity of subscribers and donors for over £15,000 a year. Without sufficient help from them the existing benefactions would have to be curtailed. The Sherman Bigg Fund enables the Foundation to make educational grants for those who cannot obtain scholarships. Donations to augment the income of this Fund will be most welcome. Subscriptions and donations for whatever aspect of the work may be sent to the secretary, Epsom College, Surrey.

Applications are invited for (*a*) St. Anne's Scholarships for girls attending Church of England schools. Candidates must be fully 9 years of age and the orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected; and (*b*) Pensions for necessitous medical men fully 55 years of age, provided they have been registered for five years, and for the widows of medical practitioners fully 60 years of age.

There are also available (*a*) annuities for the spinster daughters of medical practitioners of 55 years and upwards (awards are made as vacancies occur); (*b*) scholarships and grants for children of either sex, not necessarily orphans; candidates must be of public school age and in need of such help; and (*c*) grants from the Eastes Trust for the relief of registered members of the profession of any age, their widows and orphans, and for the educational assistance of their daughters or sons.

Full information and forms of application are available, on request, from the secretary, Epsom College, Surrey.

The Minister of Health has approved the appointment of Mr. S. A. Heald as Public Relations and Principal Press Officer to the Ministry. Mr. Heald is now serving as Director, Reference Division, in the Central Office of Information, and will take up his new appointment on January 24.

GENERAL ELECTION

MEDICAL CANDIDATES

In 1945 at the last General Election 37 medical men and women stood as candidates and 13 were elected. So far as can be ascertained there will be 24 medical men and 3 medical women standing for Parliament at the General Election on February 23.

The names of those who were members of the last Parliament are indicated by an asterisk. It is not possible in all cases to give the age of the candidates, but the year of their qualification affords some guidance, and this has been given in parentheses.

REGINALD FREDERICK BRITTAIN BENNETT, V.D., Gosport and Fareham, Conservative. (1937).

Psychiatric Registrar, Maudsley Hospital; Registrar in Psychosomatic Medicine and Demonstrator in Psychiatry, King's College Hospital; Member, Inner Temple; Surgeon Lieutenant-Commander, R.N.V.R.

*ALFRED DAVIES DEVONSHER BROUGHTON, Batley and Morley, Labour. (1929).

M.P. for Batley and Morley since February, 1949. Honorary Physician, Batley and District Hospital. Former Chairman of Dewsbury Division of B.M.A. Squadron Leader, R.A.F.V.R.

HUGH BRUCE OLIPHANT CARDEW, Bath, Labour. (1939).

General Secretary, Medical Practitioners' Union.

*Rt. Hon. WALTER ELLIOT ELLIOT, P.C., *M.C.*, Kelvingrove, Conservative. (1913).

Was Minister of Health, 1938–40, and had previously been Secretary of State for Scotland and Minister of Agriculture. M.P. for Lanark, 1918–23; Kelvingrove, 1924–45; and Scottish Universities since November, 1946. Rector of University of Glasgow since November, 1946, and Rector of University of Aberdeen for 1933–6. Won *M.C.* and bar in first world war.

JACOB ARTHUR GORSKY, Cities of London and Westminster, Liberal. (1918).

General practitioner; Lecturer in Forensic Medicine, Charing Cross Hospital Medical School; Deputy Coroner, East London and West and East Middlesex; Barrister-at-Law; Member, Inner Temple; Member, B.M.A. Council.

*SOMERVILLE HASTINGS, Barking, Labour. (1902).

M.P. for Reading, 1923–4 and 1929–31, and for Barking since 1945. Consulting Surgeon and Lecturer to Ear and Throat Department, Middlesex Hospital. President, Socialist Medical Association. Chairman of Board of Governors of Hammersmith, West London and St. Mark's Hospitals. Chairman of London County Council, 1944–5, and previously chairman of its Hospitals and Medical Services Committee.

JOSEPH JOHN HAYWARD, Cardiff South-East, Conservative. (1942).

General practitioner in partnership at Whitchurch, Glamorganshire. Surgeon-Lieutenant, R.N.V.R.

CHARLES HILL, Luton, Liberal-Conservative. (1927).

Secretary, British Medical Association. President, World Medical Association. Vice-president, and formerly chairman, Central Council for Health Education.

*SANTO WAYBURN JEGER, Holborn and St. Pancras South, Labour. (1923).

M.P. for St. Pancras South-East since 1945. Practises in London and has taken a prominent part in local government in Shoreditch.

Mrs. NORA MAITLAND JOHNS (*née* LEESMITH), Kingston-upon-Thames, Labour. (1924).

Assistant Medical Officer of Health, Rural Districts of Guildford, Hambledon, and Haslemere.

WALTER NORMAN LEAK, Northwich, Liberal. (1915).

General practitioner, Winsford. Member, Cheshire County Council.

GEORGE SINCLAIR ROSS LITTLE, Cardigan, Conservative. (1930).

Formerly senior house-surgeon, St. Bartholomew's Hospital; and resident medical officer, St. Mary's Hospital for Women and Children, Manchester. Now farming and no longer in practice.

ERIC FREDERICK ST. JOHN LYBURN, Tonbridge, Independent Conservative. (1930).

In general practice at Tunbridge Wells.

ROBERT DOUGLAS MCINTYRE, Motherwell, Scottish Nationalist. (1938).

M.P. for Motherwell and Wishaw, April–July, 1945. Chairman, Scottish National Party (Secretary, 1942–5). Assistant Medical Officer of Health, County of Stirling.

*HYACINTH BERNARD WENCESLAUS MORGAN, Warrington, Labour. (1909).

Advisory medical officer, Union of Post Office Workers, and adviser and consulting specialist, industrial diseases, Trades Union Congress. M.P. for Rochdale since 1940 ; previously sat for Camberwell North-West. Member, B.M.A. Council.

*Sir BASIL HAMILTON HEBDEN NEVEN-SPENCE, Orkney and Shetland, Conservative. (1911).

M.P. for Orkney and Shetland since 1935. Served abroad in Egypt and the Sudan, and in Palestine. Formerly specialist physician, Aldershot Command. Retired 1927.

WILLIAM JAMES O'DONOVAN, O.B.E., Fulham West, Conservative. (1909).

M.P. for Mile End Division of Stepney from 1931 to 1935. Physician to Dermatological and Syphilological Department, London Hospital. Lecturer in Dermatology, London Hospital and London School of Dermatology.

Mrs. ATTRACTA GENEVIEVE REWCASTLE (*née* CANDON), O.B.E., Willesden West, Conservative. (1921).

Surgeon Lieutenant-Commander, R.N.V.R.; Medical Superintendent, W.R.N.S. At present engaged half-time on child-welfare work.

ALEXANDER DUFF ROBERTSON, Motherwell, Conservative and Liberal. (1949).

Graduated M.B., Ch.B.Ed., last July. Elected to Hunter Stewart Research Scholarship in Social Medicine for 1949–50. Now working in Department of Social Medicine at Edinburgh.

*SAMUEL SEGAL, Preston North, Labour. (1927).

Not in practice now. Squadron Leader, R.A.F.

SYDNEY SHARMAN, Carshalton and Banstead, Labour. (1927).

Psychiatrist, Millbank Hospital; Neuropsychiatrist, Ministry of Pensions and Ministry of National Insurance; Tutor and Lecturer in Psychology (Extramural), Universities of Oxford and London.

*MALCOLM STODDART-SCOTT, O.B.E., T.D., Ripon, Conservative. (1926).

M.P. for Pudsey and Otley since 1945. On medical staff of General Infirmary at Leeds, 1929–39. Served in R.A.M.C., 1939–45. A.D.M.S. 48th Division, 1943–5. Lieutenant-Colonel, A.M.S.(T.). Vice-chairman, British Rheumatic Association.

*BARNET STROSS, Stoke-on-Trent Central, Labour. (1925).

General practitioner, Stoke-on-Trent. Medical adviser, Pottery Workers' Society and North Staffordshire Miners' Federation.

*Rt. Hon. EDITH CLARA SUMMERSKILL, P.C., Fulham West, Labour. (1924).

M.P. since 1938 and Parliamentary Secretary to the Ministry of Food since 1945.

*STEPHEN JAMES LAKE TAYLOR, Barnet, Labour. (1934).

M.P. for Barnet since 1945. Parliamentary Private Secretary to the Deputy Prime Minister and Lord President of the Council since 1947.

JOHN RICHARD TIMMIS TURNER, Crewe, Conservative. (1936).

General practitioner, Nantwich.

ALEXANDER TAYLOR MACINTOSH WILSON, Aberdare, Communist. (1940).

Honorary Medical Officer, Aberdare Hospital.

Reports of Societies

ACHALASIA OF THE CARDIA

A discussion on achalasia of the cardia was held in the Section of Surgery of the Royal Society of Medicine on January 4, Mr. DIGBY CHAMBERLAIN presiding.

Mr. NORMAN BARRETT said that his observations were based on an experience of about 40 patients followed up for a period of more than one year. Achalasia might be defined as a state of prolonged obstruction at the lower end of the oesophagus but without an organic stricture. They were not discussing states of temporary spasm induced by emotions such as fear, nor were they discussing cases in which there were demonstrable lesions, such as carcinoma of the stomach. It was difficult at times to differentiate between true or primary achalasia and these other conditions, and the difference could not always be detected radiologically or even by the endoscopist. At operation, however, the external appearances of the gullet were constant and typical. Immediately above the point at which the oesophagus entered the stomach there was a narrow segment 4 to 6 cm. in length which was compact and small, but apart from these abnormalities there was no evidence of inflammation or adhesion.

He believed that the first sign noted in achalasia was an increased irritability of the whole gullet below the aortic arch. As carcinoma and achalasia occurred in the same age groups there would be occasions when only thoracotomy could settle the diagnosis. In some cases of achalasia there was only slight disability, and the patients could so order their lives that no treatment was necessary. He believed that in infants and children the condition was more likely to be self-limiting. For some adult patients life became intolerable. Death from starvation was unusual, because liquid from the oesophagus dripped through into the stomach and this food, though decomposing and offensive, became available for digestion.

He submitted that this disease should be checked early. He condemned psychiatric treatment, which seemed to him to "add insult to injury." He could not confirm that the trouble was due to psychological upset. On the other hand, most people who developed achalasia had ample reason for being mentally disturbed, and their psychological troubles were often alleviated by the cure of the oesophageal obstruction.

In treatment he did not favour the mercury bougie; it did not cure the condition. Instead it induced a habit, and added neuroses. The safest and most certain treatment was by means of endoscopic dilatation of the narrow segment using the dilator devised by V. E. Negus. From 60 to 80% of patients were relieved of their symptoms or cured by one or two such treatments. Rupture of the oesophagus, if it occurred, could be corrected surgically provided the early signs and symptoms were recognized and the diagnosis made. When dilatation failed to cure, patients should be advised to undergo early operation. Mr. Barrett gave a list of the techniques tried during the last 80 years, and spoke of trans-gastric dilatation, which was first performed by Mikulicz in 1903 and studied in this country by Sir James Walton. In America oesophago-gastrostomy was now the most popular operation. In 1940 Ochsner and DeBakey collected a series of 88 cases from the literature which included 5 deaths and 1 bad result. Heller's cardiomyotomy, in which the circular muscle fibres of the lower oesophagus were divided leaving the cardia intact and anatomically in its normal position, was also reported as giving good results; Ochsner and DeBakey collected 104 cases in 1940, and of these 80 were said to be cured.

General Principles

Certain general principles could be formulated. (1) The failure or success of any operation could no longer be attributed to details of technique. (2) Only procedures directed at the obstructing segment itself had been shown to be efficacious. (3) Although any operation which overcame the oesophageal obstruction relieved the symptoms, an operation which rendered the cardia incompetent, permitted reflux of the gastric contents, and caused "oesophagitis" in a large proportion of cases could not be regarded as satisfactory. Whatever the explanation, it seemed fairly certain that oesophago-gastrostomy, cardioplasty, excision of the lower constricted segment, and all operations of that type were apt to be followed by "oesophagitis."

Up to 1947 he had performed oesophago-gastrostomy in 19 cases. There was no operative mortality and all the patients were at first considered to be cured, but only three of these patients appeared to be finally cured; the remaining 16 had either developed pain and dysphagia due to inflammation or had anaemia due to slow bleeding from the mucosa. Mr. Franklin, of the British Postgraduate School, had added to his list six patients on whom he had performed cardioplasty. Three of these were symptomatically cured, but four were known to have "oesophagitis."

Of the various inflammations which might affect the oesophagus, there were two quite different types relevant to this disease. The first preceded any treatment and was due to stagnation of food and of saliva above the block, and this could, of course, be relieved by any operation which dealt with the obstruction. The other was due to the development of an incompetent cardia, the result of the surgeon's work,

and was caused—he believed, but was not quite certain—by acid pepsin or something that came from the stomach.

Eleven of his 40 patients had undergone Heller's operation, and there had been good results in 10. A good result meant that the patient had put on weight, had no complaints, and had remained free from symptoms for at least one year after operation; an imperfect result meant that the patient still had signs and symptoms. If the fibres were completely severed the clinical results of Heller's operation were, in his opinion, very good. The operation could be carried out in a few moments by thoracotomy or laparotomy. Finally, he stressed that in some of these patients the post-operative *x*-ray appearances were not quite as good as the clinical results might lead one to expect.

Criterion of Cure

Mr. PHILIP ALLISON said that his experience was based on 76 patients (34 males and 42 females). The most frequent age for the onset of symptoms was 30–40; the next commonest decade was 10–20, and the next 40–50. The symptoms were often of such long standing that the age of onset of symptoms was much earlier than the age at which treatment was undertaken. All the patients had had oesophageal wash-outs and then the cardia was dilated through the oesophagus by the Negus bag. If this method of treatment did not appear to be successful he had done Heller's operation. Among these patients there had been three deaths; two of them could not be ascribed in any way to the treatment, and the third patient died under a spinal anaesthetic.

Clinical success and radiological success were not necessarily the same. He felt that clinical success was the criterion, and that success was complete if the patient took a normal diet without difficulty or regurgitation, without a sense of obstruction, and without medicine. His list included some patients whose oesophagus had become so dilated, fibrosed, and inert that it could never act as anything but a tube for the passage of food; but so long as there was no stagnation these patients were cured. The patient's attitude to the condition was important: the patient who was determined to overcome the trouble might well survive and the patient who gave in might starve.

Of his own 76 patients, 16% had chest complications. In 3 of the 76 cases there was rheumatoid arthritis, which responded to the treatment of the oesophageal condition. He mentioned one patient whose diet, according to his own story, had been rice pudding and biscuits, but who went to the public-house in the evening, and had to sip his first pint very slowly. He felt it "running up" in his oesophagus, and then, just when it was "coming to the boil," he took another pint quickly and all was well.

The Heller operation he carried out in three groups of patients: (1) children; (2) patients in whom the oesophagus was so tortuous that the cardia could not be found, and (3) those in whom the oesophagus was so inflamed that he was afraid to stretch it. The operation had been carried out in 19 patients, and in all with complete success. Of 46 patients treated successfully by means of the Negus dilator, 29 had only one dilatation, 15 had two, 1 had three, and 1 had four. These 46 included a number who now had no symptoms whatever, but also some who had slight symptoms but were taking a normal diet.

Other Experiences

Sir JAMES WALTON spoke of the frequency of a congenital origin in these cases: also, although in some cases the symptoms came on suddenly, the change in the oesophagus had manifestly taken years to develop. A large number of these people had to live the life of a recluse. One of their characteristic symptoms was that they vomited during sleep.

Mr. R. C. BROCK spoke of the importance of lung complications. Dilatation called for great care and efficiency. In the treatment of these cases of achalasia of the cardia he had not been quite so fortunate as the other speakers. He had had both good and bad results following oesophago-gastrostomy. With regard to Heller's operation, he had carried it out on a number of patients, and had certainly found it cured the condition in some, but he had also had some disappointing results. The radiological result might be very unsatisfactory, though the clinical result might be good.

Mr. F. A. D'ABREU said that he had treated infants conservatively; any psychological treatment should be directed to the parents. If the parents were intelligent the results were good. Parents were apt to be too anxious about diet, and the child did not get enough food. When the child reached the age of 6 or 7 he would carry out Heller's operation if necessary. Heller's operation had been carried out in 12 patients, with good results in all except one of them.

Sir THOMAS DUNHILL recalled a case twenty years ago in which he carried out an oesophago-gastrostomy; the patient lived for ten years afterwards, and was reasonably comfortable.

OBSTETRIC OPERATIONS IN DIFFICULT LABOUR

At a meeting of the Edinburgh Obstetrical Society on December 14, 1949, with the vice-president, Dr. JOHN STURROCK, in the chair, Profesor R. A. LENNIE, of Glasgow, read a paper on "Obstetric Operations in Difficult Labour."

Professor Lennie condemned episiotomy as a routine in primipara, though its use was probably justified in certain circumstances. One of the most difficult problems in obstetrics was the occipito-posterior presentation associated with early rupture of membranes, delay in the first stage, and sometimes an impacted anterior lip of the cervix. Caesarean section had been advocated for these cases, but the speaker preferred a policy of "patience, time, and morphine." When a woman was showing signs of exhaustion and the cervix was not fully dilated, manual dilatation of the cervix should be carried out in preference to Dührssen's incisions.

Discussing pelvic contraction Professor Lennie stressed the need for viewing *x*-ray pelvimetry in its proper perspective and pointed out that the assessment of disproportion was essentially a clinical problem. In these cases the secret of successful treatment was again patience, time, and the judicious administration of morphine. The greatest difficulty arose in cases of "generally contracted" pelvis. In these patients it should be remembered that narrowing of the pubic arch was probable, but if the vertex had descended past the level of the ischial spines the pubic arch was seldom narrowed sufficiently to prevent delivery with forceps.

Glasgow, he said, had become notorious for the incidence of flat pelvis, particularly associated with rickets, but, fortunately, the incidence of rickets had declined steadily during the past twenty years; extreme cases were now seen only occasionally. In cases of "flat pelvis" the difficulty would arise at the pelvic brim. Professor Lennie referred to the relative difficulties of posterior and anterior parietal presentations, and demonstrated a clinical method of correcting the former variety. Elective caesarean section he thought unjustifiable. All patients should be given a "trial labour" and by this means many unnecessary caesarean sections would be avoided. In cases of breech presentation external version should be performed. The speaker then outlined the prospects of vaginal delivery in terms of the degree of pelvic flattening and justified his conclusions by reference to the statistics of Glasgow Royal Maternity Hospital for 1946. Tables were shown which indicated the high incidence of spontaneous births in cases of contracted pelvis and the greater foetal mortality relative to the greater number of caesarean sections performed within the various units of the hospital.

The management of labour in face, brow, and shoulder presentations was then discussed. In the majority of cases a brow presentation was an indication for caesarean section if the presentation had been diagnosed before attempts at vaginal delivery had been made. Following internal version for cases of shoulder presentation, it was the duty of the obstetrician to explore the uterus manually to exclude a possible rupture.

In conclusion Professor Lennie referred to the modern tendency to rely on caesarean section as a means of dealing with obstetric difficulties. This tendency appeared to be increasing year by year, but he looked forward to the day when caesarean section would be relegated to its proper place in obstetrics.

Correspondence

Fate of the Foreskin

SIR,—May I, as a surgeon, say how completely I agree with Dr. Douglas Gairdner's summary (December 24, 1949, p. 1433) of the question of circumcising infants? For many years now I have done fewer straightforward circumcisions than operations designed to correct or mitigate the results of previous attacks upon the foreskin. Among these may be mentioned:

1. *Stretching the prepuce.* This quite futile proceeding causes a great deal of unnecessary pain and anxiety. Occasionally the reaction is so severe that circumcision is justifiable to end the sufferings of parents and child.

2. *Bleeding.* This is fairly often severe enough to cause much alarm, but rarely causes death. As in operations on the tonsils and adenoids it is almost invariably ascribed to arteries, although it is obviously venous. It is quite impossible to keep a healthy artery of the size met in these operations bleeding for more than a very few minutes.

3. *Removal of too much skin.* This may in a small fat baby produce the alarming appearance of what the Americans call a "toad-in-the-hole penis." The organ retracts into a pit in the surrounding fat, and it may be very difficult to convince the parents it has not been totally removed. I have known skin grafting to be necessary to relieve pain on erection due to this cause.

4. *Removal of too little mucosa.* This allows the circular wound to slip forwards over the end of the penis, where it contracts rapidly and completely, so that urination may be very difficult. The resultant problem is far from easy to solve if approached in the wrong way. The trick in untangling this is to make a circular cut through the skin just proximal to the ring of scar tissue and retract this so as to leave only mucosa covering the glans. This mucosa is then torn through cautiously with forceps and, once the corona is exposed, the situation is clear.

5. *Untidy tags of skin,* which can be very ugly and cause embarrassment that makes their removal worth while.

6. *Fistula of the urethra.* I have seen eight cases in which this was caused, presumably from a stitch put into the frenum penetrating the urethral floor. No attempt should be made to construct an inner tube, but the surrounding skin should be widely freed and treated as in my hypospadias operation.

7. *Amputation of part of the glans,* with resultant violent bleeding. If the penile skin is allowed to adhere to the raw surface a very difficult problem results.

8. *Amputation through the body of the penis.* I have only seen one case of this, although I have heard of another. In the one I saw I think the disaster occurred through a quite inexperienced casualty officer being faced with the result described in 4. He probably argued that circumcision consisted in cutting off the end of the organ, and proceeded to do so.

9. *Sewing the skin edge to the glans,* with consequent burying of the corona. This mistake arises from not retracting the mucosa fully. It entails a tedious little dissection.

10. *Circumcision of a case of hypospadias.* Sometimes a medical practitioner faced with this condition and in doubt what to do removes as a start the reservoir of skin on which I and many other surgeons depend for making a new urethra.—I am, etc.,

London, W.1. DENIS BROWNE.

SIR,—In Dr. Douglas Gairdner's stimulating article (December 24, 1949, p. 1433) the argument about the prophylactic value of circumcision turns, in several instances, on the comparative incidence of circumcision in normal and diseased groups. One of us (A. L. H.) has recently made a study of the incidence of circumcision in a number of merchant seamen, and the results may therefore be of interest as additional evidence of its prevalence.

The men examined were all Europeans and over 95% were British. According to the Registrar-General's classification they were all in Social Classes III and IV. The results were:

Age	No. of Men Examined	No. of Men Circumcised	Percentage Circumcised
15–	630	192	30
21–	664	147	22
26–	499	109	22
36–	335	64	19
46–65	249	48	19
15–65	2,377	560	24

These figures suggest that circumcision has become more frequent in the last twenty years and that date of birth must be taken into consideration (as well as social class) when the incidence of circumcision is compared in different groups.—We are, etc.,

RICHARD DOLL.
A. L. HADLEY.

M.R.C. Statistical Research Unit,
The London School of Hygiene and
Tropical Medicine, London, W.C.1.

SIR,—Dr. Douglas Gairdner's defence of the foreskin (December 24, 1949, p. 1433) is certainly not the first, but equally certainly one of the ablest critical reviews of the barbarous custom of circumcision written in our times. That no one will take the slightest notice of what he says is equally certain.

A world which for many thousands of years has accepted the intellectual affronts of ecclesiastical dogmata, only finally to throw them over with much misery and bloodshed in favour of dialectical materialism, can scarcely be expected to use its reasoning on such a little matter as a tag of skin. What is strange, however, is that doctors everywhere do not protest more vigorously, if not necessarily with the reasoned clarity of Dr. Gairdner, at the continuance of this surgico-religious insult to normal physiology—and that in spite of the fact that at least three generations of doctors have sat during their student days at the feet of biologists whose principal function was to teach and explain by example to us the nature, the wonder, and the universality of the relationship in the living world of structure to function.

Centuries of basket-carrying has so modified the hereditary components of the Basque fisherfolk that a proportion of their children of pure local stock are in fact born with an exaggerated kypho-lordosis and disproportionately strong shoulder girdle, thus enabling them at an early age to carry prodigious loads of fish for long distances up the rocky coast tracks on their backs. A quick natural response to function, this is certainly very dramatic when reckoned against the thirty million years of human existence. Yet during that same period there has never been recorded a little boy born without a foreskin

Nature continues in fact, and in spite of our efforts to impede her, to strive towards the perfect specimen of man. Perhaps one day we shall grow weary of sticking skewers through his nose and ears, cutting off his foreskin, tattooing his skin, and even "conditioning" his mind to intellectually untenable legend and political slogan and decree, and leave him free to develop to his best what he has and where he wants it.—I am, etc.,

London, W.1. GEOFFREY PARKER.

SIR,—Much debatable material has been introduced into an otherwise informative article by Dr. Douglas Gairdner (December 24, 1949, p. 1433). He quotes the Registrar-General's figures of 16 deaths (in children under 5 years) yearly from circumcision or phimosis—but no one knows how many are due to circumcision alone. How many died with a phimosis and without a circumcision? There is no doubt that local registrars will accept death certificates with phimosis as the sole cause of death. In the absence of more detailed figures we cannot agree that "the great majority of these deaths were attributed to operation rather than to any pathological condition necessitating operation."

Furthermore, he states that "most of the fatalities . . . occurred for no apparent reason under anaesthesia." But why

give an anaesthetic at all? If the ritual method is used anaesthesia is unnecessary, and even in a child of 6 months or over a whiff, literally, producing analgesia for at most a half-minute, is required. And why death due to haemorrhage, if not because of bad technique? The frenular artery can be completely avoided and severe haemorrhage rendered impossible. Fatal haemorrhage should occur only in haemophiliacs, whose ancestry should in any case be known. Furthermore, circumcision is most frequently performed by house surgeons who are not properly taught and do not stay long enough to observe their results. This operation is the Cinderella of surgical instruction. Indeed, if the ritual method is used both anaesthesia or haemorrhage as a cause of death would disappear.

The prophylactic effect of circumcision in syphilitic infection is dismissed almost summarily. V. E. Lloyd and N. L. Lloyd[1] are quoted as concluding that this operation did not diminish the chance of primary chancre. However, their evidence does not support this contention. Lloyd and Lloyd investigated all the new male cases attending the Guy's Hospital V.D. clinic from January to June, 1932. They excluded cases of congenital or of extra-genital syphilis, and the remaining 499 cases were divided into (*a*) circumcised patients and others with a permanently exposed glans (which they termed "a short prepuce"), and (*b*) patients with an average prepuce or with phimosis. Their figures were:

	Total Number of Cases	No. of Cases with Syphilis	Percentage of Cases with Syphilis
Circumcised or with a short prepuce (*a*)	179	41	22·9
Average prepuce or phimosis (*b*) ..	320	71	22·2

However, they do not state the site of the primary chancre beyond saying it is genital: it might have been located on the "short prepuce" itself. Besides, what is meant by the term "others with a permanently exposed glans"? How many were in this category? How "permanent" was the exposure? How many of these had completely uncovered glans and corona? What is meant by "patients with an average prepuce"?—How long is an average prepuce, and how short must it be to be called a "short prepuce"? The classification used was so arbitrary as to vitiate any conclusions reached.

Since it has never been claimed that circumcision affects the incidence of gonorrhoea it is pointless to quote Schrek and Lenowitz as stating that "hospital patients gave a history of V.D. equally often whether circumcised or not"—we are concerned solely with primary chancres. On the other hand, a mass of evidence supporting the prophylactic virtue of circumcision in this connexion is available, and I would refer Dr. Gairdner to Hutchinson,[2] Jacobs,[3] Bloch,[4] Loeb,[5] Wolbarst,[6] Vedder,[7] and Keyes.[8]

With regard to penile cancer Dr. Gairdner states, first, that all observers agree that circumcision in the first five years of life protects absolutely from penile cancer, and, secondly, that the reason for this preventive effect is not known. What proof, what line, what hint has he that by efficient retraction and local hygiene penile cancer can be avoided? Does he rely on Dean's quotation[9] that men with this disease "gave the impression of being less intelligent as a class than other cancer patients"? It is a pity that a further quotation from Dean was not added. It reads:

> "To eliminate the possibilities of cancer of the penis in as far as our knowledge of the aetiological factors permits, all male infants should be circumcised a few days after birth. In addition to complete removal of the prepuce, the urethral meatus should be carefully examined and if any obstruction is found, meatotomy should be performed."

Dr. Gairdner seems to be convinced that if a patient has venereal disease it indicates a low standard of social hygiene. Surely he means a low level of sexual behaviour, or of moral standard, or of religious practice, etc., but not of social hygiene. In any case, does it mean that this type of male does not retract his prepuce and wash himself? How is this known? What proof is there that this is the case? Furthermore it is stated that only 150 men die of this disease (yearly in Great Britain), but how many thousands are there alive who have suffered that terribly mutilating operation used to cure this condition? What psychological traumata have resulted, what physical disabilities have accrued? Dr. Gairdner has offered no proof, no shred of evidence, to support his thesis. Indeed, it is a cruel thought that he is suggesting that we expose tens of thousands of men to this disease in order to test an archaic theory by avoiding the one certain prophylactic available, namely, infantile circumcision.—I am, etc.,

London, W.9. C. A. ROYDE.

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Development of Psychological Medicine

SIR,—Allow me to congratulate the *British Medical Journal* on the splendid number, Fifty Years of Medicine (January 7). Having, metaphorically, shaken hands, I must proceed into the ring to launch an attack on Dr. John Rickman's article, "The Development of Psychological Medicine" (p. 30) and your leading article, "Progress in Psychiatry" (p. 66). It is not my intention to join issue on the highly controversial points of what I must characterize as an exposition—excellent, I admit—of merely Freudian psychology. It is true that no one person has so much influenced the course of psychological medicine as Freud, but history will prove that no one has misdirected the course of psychiatric research and progress as much as he.

For the benefit of those unacquainted with psychiatry let me state that all psychology is not Freud, that the Freudian theories of the psychoses have proved to be so much illogical rubbish, that not one psychotic has ever been or will ever be cured by psycho-analysis. The review, while excellent in itself, is completely one-sided even allowing for the difficulty of compressing fifty years and whole libraries into a few pages. However, the "doctor in the street" must obtain a very lop-sided view of psychological medicine.

Modern research, even though on a small and utterly inadequate scale, has shown that the psychoses are due to some as yet undiscovered bodily cause, probably of the nature of an "inborn error of metabolism." Investigations have shown definite abnormalities in nitrogen metabolism, mainly due to the work of Gjessing in Norway. In addition to these, abnormal carbohydrate metabolism has been demonstrated. Besides the very important discoveries in these fields, abnormalities in the functions of the autonomic nervous system have been shown. In fact deviations from normal in the total biochemical organization of psychotics have been demonstrated. It is possible that at a future date the numerous anomalies will be correlated with a basic *causa causans*—in the writer's opinion probably connected with the metabolism of urea and the detoxication of cyanides in the body.

Among the really momentous discoveries of the last fifty years, apart from the above, should be mentioned the following: that the entity known as G.P.I. is due to a purely physical cause; that various endocrine abnormalities produce definite mental symptoms—e.g., the adreno-genital syndrome (Allen and Broster and their colleagues) and hypothyroidism and myxoedema; that vitamin deficiency can produce various mental syndromes; that mental deficiency can be caused by thyroid deficiency; and that the type of mental deficiency known as phenylpyruvica oligophrenia is associated with a definite failure of metabolism—probably in the intermediate metabolism of phenylalanine.

I will not further trespass on your space except to pour a little abuse on Kraepelin. This investigator classified mental diseases on the wholly illogical grounds of symptomatology: this would have been justifiable as a necessary temporary measure had it not led psychiatrists to think that psychiatry began and ended there. Perhaps the day will come when

competent biochemists and physiologists will learn something of psychiatry or, less likely, vice versa.

Psychiatry is a vast unexplored territory suffering from a plague of psychologists—a field that will repay the intelligent explorer for his pains. The problem of mental diseases is perhaps as big a national problem as cancer and tuberculosis put together. Perhaps the time will come when an enlightened government will spend the price of one or two bombers on research. Until that day comes our mental hospitals will continue to remain as well populated as when the great Freud himself bestrode the earth.—I am, etc.,

Eire. ROBERT A. MACCARTHY.

SIR,—In the course of a press interview on the eve of his ninety-third birthday, Mr. Bernard Shaw is reported as saying: "Freud counts for nothing with me. His interpretations of all dreams as sexual were too far-fetched to be taken seriously." Even if we discount this heretical utterance of the sage as due to his advancing years there are many presumably intelligent men and women, including members of our own profession, who are of much the same opinion.

Dr. John Rickman in his article (January 7, p. 30) lays special emphasis on Freud's *Interpretation of Dreams* as a milestone in medical progress. My own reaction to that book remains the same as when I first read it many years ago: admiration mingled with astonishment at the ingenuity displayed by the author in interpreting dreams to fit in with his own theories. And is it to be held against Jung and his school of thought that they do not "embody a quarterly journal or any cohesive library series of books"? Surely with the torrent of literature on psychology and its ramifications pouring from the press may we not rather echo the words of Shakespeare's Francisco, "For this relief much thanks"?—I am, etc.,

Twickenham, Middlesex. A. G. THOMPSON.

Dangers of Dicoumarol

SIR,—In his letter on the dangers of dicoumarol Dr. R. A. Murray Scott (December 17, 1949, p. 1416) gives the outline of a method for the control of dicoumarol therapy which is quite unorthodox and, in my opinion, also dangerous. He suggests that a reduction of the "prothrombin level" to 60–75% of normal is sufficient to prevent thrombosis or to prevent an already existing thrombus from extending and preventing embolism. He also believes that estimations of "prothrombin level" at five-day intervals are sufficient, and once a month in the case of prolonged treatment. All this is certainly contrary to the findings in animal experiments and also therapeutically in many large series of human beings. From such work there appears good evidence that the prothrombin activity should be reduced to between 10 and 30% of normal. Above 30% of normal it has been found that the plasma still lends itself to thrombus production or the extension of an already existing thrombus. My experience with dicoumarol confirms the findings of these workers. When the prothrombin activity is kept below 10% of normal for more than a few days there is a tendency for haemorrhage, probably aided by an excessive dilatation of the capillaries.[1-6]

Dr. Scott does not give details of the doses, but in one case he gave 10,000 mg. of dicoumarol over a period of 92 days. Among the records of over 150 cases treated with dicoumarol during the past two years I have several which required very small doses to maintain their prothrombin activity between 10 and 30% of normal. The following is a case in point.

A man aged 45 (weight 140 lb. = 63 kg.) with acute myocardial infarction was given an initial dose of 300 mg. of dicoumarol. The initial prothrombin activity was 80% of normal. On the second day the prothrombin activity was 60% and he was given 200 mg. of dicoumarol. During these first two days he was also given heparin intravenously at six-hourly intervals. On the third day the prothrombin activity was 12% of normal, and therefore both heparin and dicoumarol were withheld. Without any further dicoumarol the daily prothrombin activity rose slowly to 22% of normal on the eighth day. By means of maintenance doses of 50 mg., given at intervals during the next twenty days, his prothrombin activity was maintained between 12 and 27% of normal. He had no haemorrhagic complications, and the total amount of dicoumarol which he received during the 28 days was 1,150 mg. The drug was now completely withheld, and on the thirty-third day his prothrombin activity rose to 92% of normal. He was discharged in a satisfactory condition on the fortieth day.

In the case quoted above I am sure it would have been disastrous to have attempted dicoumarol therapy without daily prothrombin estimations. In contrast there are cases which require larger and more frequent maintenance doses. The following case was referred to us recently and shows the danger of home treatment without prothrombin activity estimations.

A man aged 29 with thrombosis in the left thigh was seen by a general practitioner, who gave him 150 mg. of dicoumarol daily for 21 days. No prothrombin estimations were carried out during this period. He began to complain of pain in the lumbar region and the drug was withheld. On the twenty-third day he had gross haematuria and was sent to hospital. On admission I found his prothrombin activity to be 9% of normal. He was given 300 mg. of "synkavit" intravenously daily for five successive days, at the end of which time his prothrombin activity had risen to 37% and the urine appeared clear for the first time, though a moderate number of red blood cells were seen microscopically. After seven days the prothrombin activity was 70%, the urine was quite clear, and no red blood cells could be seen microscopically. Kidney function and liver function tests were normal. He was discharged ten days after admission with a prothrombin activity of 92% of normal. The thrombosis in the leg, for which dicoumarol therapy had been instituted, had disappeared. The daily synkavit doses of 300 mg. were given in 100-mg. portions at two-hourly intervals. This patient received 3,150 mg. of dicoumarol in 21 days. It is interesting to compare this case with the one reported above and with the one mentioned by Dr. Scott.

It would be of interest to know the method which Dr. Scott uses to estimate "prothrombin level." It has been shown that dicoumarol therapy controlled by Quick's method (in which the thromboplastin agent is a saline extract of brain) will indicate a lowering of prothrombin activity much sooner than any of the modified methods (in which the thromboplastin agent is Russell viper venom alone or mixed with lecithin). With these modified methods one obtains a false sense of security.[7-10]

Each case of thrombosis treated with dicoumarol requires carefully graded doses of the drug controlled by the results of the daily estimation of the prothrombin activity, particularly during the first ten days of treatment. Estimation of prothrombin activity prior to treatment is essential, because occasionally one finds patients with a low figure, indicating some liver dysfunction, and one must think twice before undertaking treatment.

The prothrombin activity before treatment and the weight of the patient must be taken into consideration when deciding on the first dose of dicoumarol (200 to 350 mg.). Patients vary in their reaction to this first dose, as seen by the effect on the prothrombin activity 24 hours later. The dose on the second day may thus be *nil* to 200 mg., depending on to what degree the prothrombin activity has been reduced. The doses on the third and subsequent days are also decided in the same way. The daily prothrombin activity estimation is undoubtedly of the greatest importance in deciding the doses which will reduce the prothrombin activity to between 15 and 25% of normal in two to four days. This laboratory estimation is also of paramount importance in deciding the further maintenance doses required to keep the prothrombin activity within the optimum range. The control of anticoagulant therapy calls for a keenness for this specialized sort of work on the part of the clinical pathologist, the clinician, and the nursing staff.

It seems a risky procedure to treat patients with dicoumarol at home, particularly if the importance of the daily prothrombin activity estimation during the first ten days is ignored. In the case of ambulant patients whose prothrombin activity has been reduced to the optimal range there is the danger of severe bruising and bleeding in case of any minor accidents, and these could assume alarming proportions. To entrust a box of dicoumarol tablets to the patient in his home is a procedure attended with great risks. In hospital, with an efficient nursing staff, one is sure that the right amount has been given at the right time. More important still is the fact that laboratory facilities are available for the necessary control daily.

During the last 100 cases treated with dicoumarol, apart from a small proportion of the cases of severe myocardial infarction who have died during treatment, I have encountered only two minor epistaxes and one transient haematuria.—I am, etc.,

Manchester. H. LEMPERT.

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The Transversely Arrested Head

SIR,—Until and unless a careful *x*-ray examination prior to or during labour is made it is idle to try to gauge the frequency of deep transverse lie of the foetal head. One is on safer ground when one surmises that the cause is relative disproportion. Where there is disproportion it is probably the commonest presentation. Ultimate variations are (with good flexion): complete rotation to normal occipital presentation, whether occipito-anterior or occipito-posterior; parietal-occipito presentations; or so-called oblique presentations resulting from asynclitism. These latter are difficult to deliver only because accurate diagnosis has not been made and forceps, if applied, are applied in the wrong "British" way to the sides of the pelvis. Given requisite time, delivery in most cases (with help of sedatives, etc.) can be achieved spontaneously.

In a frank transverse lie, when the blades are accurately adapted to the foetal head, the handles lie more or less across the fold of either buttock (of the mother). The first manœuvre is to try cautiously to flex the foetal head and so bring the occiput nearer to the centre of the pelvic outlet. Thereafter a combination of traction and internal rotation usually completes delivery with gratifying ease.

Asynclitism is what really makes application of forceps difficult, especially if the anterior parietal of the foetal head is the more advanced. Application of the forceps to the foetal head can be achieved with accuracy only if the mother is in the dorsal position, with her sacrum projecting partly beyond the end of the obstetric bed, as otherwise it may be found impossible to insert the anterior blade between the pubic symphyses and the parietal bone (foetal).

The old British way of applying the forceps along the sides of the pelvis may be simple, but it is fraught with danger to mother and child—laceration of pelvic tissues in the former; cranial fracture, and laceration of brain or tentorium in the latter. It should be unnecessary to add that full dilatation with complete canalization of uterus and pelvis must have taken place before any forceps delivery is safe. On the whole, old-pattern forceps—Simpson's or a modification—are best, because they cannot be adapted accurately to the foetal head until an accurate diagnosis is made.—I am, etc.,

Fraserburgh, Aberdeen. J. MACLEOD.

Ogilvie's Syndrome

SIR,—This name has been attached to a spastic ileus of the colon in which neurogenic obstruction is presumed to be due to carcinomatous infiltration of the sympathetic nerves of the posterior abdominal wall.[1] In an Arris and Gale Lecture on neuromuscular imbalance of the intestine I recorded a similar condition of spastic ileus of the descending colon,[2] but in this case there was an inoperable carcinoma of the left lung with infiltration of the splanchnic nerves in the mediastinum. I also pointed out that precisely similar cases of spastic ileus occurred without involvement of the nervous system and that it occurred in non-cancer cases. Neurogenic ileus and its aetiology is discussed at some length in part of the above lecture, and I have dealt with the clinical aspects elsewhere.[3] However, with the spate of articles now appearing on odd cases of spastic ileus, a condition which incidentally has been recognized for 50 years, it seems justifiable to make the following observations.

1. Neurogenic ileus should not be termed a false obstruction. It is as much an obstruction while it lasts as one of mechanical or vascular origin.

2. A spastic ileus may not relax even under a spinal anaesthetic. I have done a colostomy under the mistaken diagnosis of carcinoma for such a case, in which the spastic area of the pelvic colon did not relent until about a week after laparotomy: in this case closure of the colostomy allowed further inspection of the bowel and nothing abnormal could be found. Further, I have seen a specimen demonstrated by Dr. H. J. Barrie, now of the department of pathology, University of Toronto, in which the spastic area did not relax after death (renal failure) even when forcibly injected with water; yet histology revealed nothing abnormal.

3. The radiographic diagnosis of spastic colonic ileus is often possible. The length of narrowed bowel is greater than in a carcinoma and not curved as in an inflammatory lesion, and there is a definite proximal obstruction to the lesion. There is also usually an area of dilatation distal to the spastic area, which practically never occurs in a mechanical obstruction until venous thrombosis has taken place in that area. (These points are shown in the radiograph of a man aged 50 dying of an

inoperable carcinoma of the lung—the case mentioned earlier in this letter. The radiograph was taken some sixty hours after the onset of severe intestinal colic and shows spastic ileus of the descending colon.)

4. Neurogenic ileus of the small intestine should be treated by conservative measures, but as suction is inefficient in decompressing the lower colon surgery may be needed in colonic cases.

5. Neurogenic ileus may be spastic or distensive ("paralytic") in type. So-called passive ileus is a distensive ileus in which venous stasis has become so marked that a vascular intramural obstruction complicates a neurogenic ileus. Surgery is indicated in such neglected cases.—I am, etc.,

Sheffield. JUDSON T. CHESTERMAN.

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SIR,—The reporting by Messrs. J. A. Macfarlane and S. K. Kay (December 3, p. 1267) of three cases of Ogilvie's syndrome of false colonic obstruction prompts me to report the following case:

A man of 48 was admitted to the Warrington Infirmary on April 22, 1949, complaining of constipation for four days with no flatus for two days, and the sudden onset of severe colicky para-umbilical pain three hours prior to admission. He gave no history of constipation, pain, or bowel upset before this attack, and had always been healthy.

On examination he was a stout, well-built man, pale and perspiring, who had severe attacks of spasmodic pain approximately every 15 minutes. The abdomen was tense and distended; no mass could be felt. Rectal examination was negative, and there was no rise of pulse rate, nor fever. The tongue was dry and dirty. A diagnosis of intestinal obstruction was made, and operation performed two hours after admission.

The bowel was grossly distended from the pelvic colon to the lower ileum. At the level of the obstruction in the pelvic colon the bowel was firmly contracted. The colon beneath this was flat and normal. A diagnosis of carcinoma of the pelvic colon was made, and a transverse colostomy performed. On opening the colostomy abundant gas escaped, with a little fluid faeces. The colostomy functioned well in the ensuing weeks.

On May 17 the abdomen was reopened through a left iliac muscle-cutting incision over the pelvic colon. The pelvic colon, ascending colon, and splenic flexure were normal in appearance, and there was no tumour evident. A tentative diagnosis of colonic spasm was made, and the abdomen closed. On May 26 the transverse colostomy was closed in the usual manner.

Over the next four days the patient had severe griping pain similar to his initial attack, and the colostomy broke down, with amelioration of the patient's symptoms. On June 23 a repair of the colostomy was attempted, but this broke down again as before. On July 26 there was a further attempt at closure, and a complete intraperitoneal repair using thread was carried out. The patient's condition following this was not good, and he developed further signs of obstruction with distension of the abdomen and severe pain. Four days after the transverse colostomy had been closed an emergency caecostomy was carried out; peritonitis was confirmed by the presence of thick foul pus in the abdomen, which was drained. The caecostomy functioned well, and was later closed satisfactorily: atropine and hyoscyamine were then given.

The patient is now quite well apart from a ventral hernia where the transverse colostomy had been repaired.

This case is similar to the three reported, and indicates further the severity of the spasm, which was sufficient to cause breaking down of the repaired colostomy on two occasions. Whether the eventual success of the closure of the caecostomy was due to antispasmodics employed post-operatively or due to the natural course of the disease is not definite. It would seem, however, that the use of antispasmodics has been fully justified.

I must thank Mr. D. H. Young for permission to publish this case.

—I am, etc.,

Warrington. J. A. BARCLAY.

Lymphadenopathy in Brucellosis

SIR,—With reference to Dr. Hugh Conway's article on lymphadenopathy in brucellosis (October 8, 1949, p. 787) and the subsequent letter from Dr. M. C. S. Kennedy (November 12, 1949, p. 1113) on the actual existence of lymph nodules in undulant fever, I beg to point out that lymphadenopathy seems to have been of very frequent occurrence before the work of the Mediterranean Fever Commission. Clinicians of high repute in Italy used to give undulant fever various names, such as sewer fever, gastro-intestinal fever, and cesspit fever. There were also some that used to call it "tifo-adenopathic" fever; hence it is easy to conclude that in undulant fever lymphadenopathy was of frequent occurrence.

This manifestation and many others are now becoming stray involvements among numerous cases, and their disappearance confirms Nicolle's dictum of 1927, that the features of undulant fever are protean. Another manifestation during the course of *Brucella melitensis* infection which is gradually disappearing from the scene is orchitis. Both lymphadenopathy and orchitis were of rare occurrence in hundreds of cases observed by me in the last decade. The disappearance of these manifestations from the picture of brucellosis seems to be due to two social conditions which have changed by the passage of time: these are, in my opinion, the advent of motor transport and the fact that the reluctance of farm-hands to work with shod feet during their daily labour on their fields has been overcome. —I am, etc.,

Luqa, Malta. J. MORANA.

Surgical Management of the Aged

SIR,—As one whose surgical work includes a large amount of geriatrics, I found the article by Mr. Peter Childs and Dr. Stanley A. Mason (December 17, 1949, p 1389) an extremely interesting one, and was stimulated to consult personal records over the last three years. In the belief that a similar series of cases may hold some interest for a wide circle of readers, the following brief and simple comments are presented (in each case figures in parentheses indicate fatalities).

1. Number of cases: 1947, 29 (7); 1948, 46 (12); 1949, 46 (9). Total, 121 (28), giving a mortality of approximately 23%—6% higher than in the previous series.

2. Of this series, 33 (10) patients were over the age of 80, and 88 (18) between the ages of 70 and 80. There was thus a much higher mortality in the older age group.

3. All were major cases except three. Emergency operations, 38 (16); non-emergency, 83 (12). Abdominal operations, 77 (19); strangulated hernia, 17 (4); above-knee amputations, 10 (3); gastrectomy, 4 (0); colectomy, 6 (2); prostatectomy, 11 (1); cholecystectomy, 4 (2). The advantages of being able to prepare the patient is apparent in much lower mortality for "set" procedures.

4. In any series of cases of this nature some deaths are unavoidable by nature of the advanced (and often mixed) pathology present. Among these are to be included cholangitis with cirrhosis of the liver (1), toxic myocarditis with infected senile diabetic gangrene in patients bedridden for months prior to operation (3), cachexia from advanced malignant disease (4), rupture of caecum (volvulus of caecum) during induction of anaesthesia (1), mesenteric thrombosis (1), perforation of colonic neoplasm (1).

5. In this series the main cause of death was cardiac failure, brought about most commonly by toxaemia (infective or intestinal) in the presence of an impaired myocardium (fibrosis with arteriosclerosis, often with abnormal rhythms). One patient (cholecystectomy) died instantaneously from what was believed to be a massive pulmonary embolus, but confirmation was impossible owing to the fact that permission for post-mortem examination was refused.

6. In two cases cardiac arrest occurred during operation; in each the heart was restarted by cardiac massage, but both patients subsequently died (one from acute heart failure after five hours and the other with congestive heart failure after some days).

7. As time has progressed so have efforts at early ambulation been more energetic—the reward for which is possibly to be seen in the figures for the current year.

8. Difficulties of disposal were experienced, and the plea put forward by Childs and Mason for more adequate provision of accommodation deserves support.

In conclusion, it is pointed out that all these cases were dealt with in what was, until recently, a municipal hospital—the implications of which are too well known to need repetition.—I am, etc.,

Hull. MALCOLM S. CAMPBELL.

Vagotomy for Peptic Ulcer

SIR,—In his letter on this subject (December 31, 1949, p. 1529) Dr. J. Thomson Shirlaw states that "one can quite well control the secretory activities of the vagus with atropine in gradually increasing doses." I should like to point out that having carried out this experiment, checked by repeated gastric analyses, I found that the effect of atropine on gastric acid is variable. Furthermore, with doses sufficient materially to affect gastric acidity the effects of atropine on accommodation and on the oral secretions are disagreeable if not incapacitating.

Vagotomy does not stop the secretion of acid in the stomach as Dr. Shirlaw says; it prevents the secretion of acid in response to psychic stimuli only, and does not affect the hormonal secretion of acid which takes place in response to meals.

The operative mortality of vagotomy and gastrojejunostomy is less than 1% according to Dragstedt and his co-workers.[1] As a result of this operation it has been my experience that patients need have no qualitative dietary restrictions. Surely this is more desirable than dieting rigidly for the rest of their lives as Dr. Shirlaw advocates.—I am, etc.,

Wigan, Lancs. W. WEATHERSTON WILSON.

REFERENCE

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Stress Incontinence

SIR,—On December 16, 1949, through the courtesy of Mr. Charles Read I was a visitor at the meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine. Mr. Charles Read and Mr. T. J. Millin both gave excellent addresses on recent conceptions and advances in stress incontinence of urine in women.

The causes and treatment of this distressing complaint were discussed very fully. Childbirth was the chief, though not the only, causative factor. The various so-called sling operations for the treatment of this complaint were described and discussed at length. Mr. Millin described his latest operation, which several days before he had very kindly allowed me to see him perform. Both speakers stressed the importance of less radical measures by the vaginal route in any first attempt to cure the incontinence. Most of their cases were those on which previous vaginal operations had been done without success. In the statistical survey given by the two principal speakers and by others I was astonished by the large percentage of failures of vaginal operations. It is this fact that has emboldened me to make the following constructive and, I hope, helpful suggestions.

A structure that is anatomically nearer than any of those mentioned is the uterus, which itself can be used as a "sling" or, more correctly, a support. In doing the Fothergill operation for prolapse or the cystocele operation, whether for incontinence of urine or not, I push the bladder up high enough off the uterus to allow a strong purse-string type of suture to be placed through the strong tissues up to the periosteum on each side of the angle of the pubic bones—passing below the urethra and taking a good hold of the exposed anterior uterine wall. This stitch approximates strong tissue below or under the urethra and at the same time brings the body of the uterus forward to act as a support to the urethra and bladder junction over a broad area: if correctly placed, the urethra is not unduly constricted and the uterus is not held down too low. The passage of a catheter shows how well the urethra–bladder relationship has been restored. It is wise to place another strong stitch straight across through the same structures as the previous stitch only after the first stitch is tied. This reinforces the platform and ensures keeping the uterine body forward. The rest of the operation is done in the ordinary way.

The two points, therefore, I would like to stress are: (1) pushing up the bladder, and of course the ureters, higher than is usually done; and (2) including a portion of the anterior wall of the uterus in the so-called purse-string suture. If this procedure were adopted I think the modern sling operations would rarely be necessary.—I am, etc.,

Adelaide, South Australia. LLEWELLIN DAVEY.

Erysipeloid

SIR,—I was interested in the letters of Mr. R. J. McNeill Love and Dr. Cyril Boroda (December 17, 1949, p. 1411). They bear out some of the statements in my letter in the *Journal* of March 13, 1948 (p. 521), under the heading "Swine Erysipelas Infection in Man." Dr. Boroda suggests a seasonal incidence and Mr. McNeill Love gives the seasonal incidence as June to October. In my letter I remarked on a seasonal incidence of August to February. Probably the infection is later in appearance in this area, as our summer commences later. *Erysipelothrix rhusiopathiae* flourishes in putrefying flesh—meat gone bad in summer months and high game until February—and this probably accounts for the greater number of cases occurring in humans during these months.

Both your correspondents also find it by no means uncommon, and I agree and think it is frequently unrecognized. My first two cases, as reported in my letter, failed to respond to 200,000 units of penicillin twice daily, but one case responded rapidly to 50,000 units three-hourly. Since then I have abandoned three-hourly injections, as I have found in four subsequent cases that 500,000 units given night and morning for one week has been entirely satisfactory.

Dr. Boroda has been told that the disease has a definite topographical distribution and wants to know of its incidence in other parts of the country. His informant is probably correct, as the organism, being excreted in the faeces of infected and of apparently healthy animals (swine, rabbits, ducks, fowls and sometimes lambs), multiplies rapidly in the soil in wet years and in low-lying areas. The Isle of Islay is both very wet and low-lying, and one would expect to find these cases more numerous in flat agricultural areas with a heavy annual rainfall.—I am, etc.,

Bridgend, Isle of Islay, Argyll. CAMPBELL M. MCINTYRE.

SIR,—I have followed with interest the correspondence about erysipeloid in these columns subsequent to the memorandum by Dr. R. A. Bush (October 29, p. 964). The condition appears to be less common here than on the Continent. As far back as 1925 I treated a series of cases of erysipeloid during a mass infection in Berlin with specific antiserum which, owing to its unique effect, became the treatment of choice in the days before the "sulpha" drugs and penicillin.[1] A single intramuscular injection of 5 ml. sufficed as a rule to check the progress of the disease. Sometimes it had to be repeated in 24 hours to effect full regression of the lesion. Cases treated by other means often progressed and became troublesome.

I noticed that several recent reports mentioned some cases which did not respond to penicillin. In view of the importance of checking erysipeloid early in order to avoid the severer forms with their unpleasant sequelae, such as lymphangitis, arthritis, and even occasionally osseous necrosis, it seems worth considering the possibility of giving specific antiserum in cases which do not respond to penicillin.—I am, etc.,

London, S.W.6. F. ARNHOLZ

REFERENCE

Arch. clin. Chir., 1925, **138**, 736.

Authors and Psychopaths

SIR,—Dr. W. Russell Brain's most interesting address (December 24, 1949, p. 1427) has stimulated us to ponder again on those very old problems of artistic creation, aesthetic appreciation, and the psychopathological aspects of art, problems concerning which much has been written and still more debated since the days of Lombroso and Nordau. When all is said and done one always comes up against a mystery, and I do not believe that Freud's conclusion, expressed over thirty years ago in his study of Leonardo da Vinci, can be gainsaid:

> "The tendency to repression, as well as the ability to sublimate, must be traced back to the organic bases of the character, upon which alone the psychic structure springs up. As artistic and productive ability are intimately connected with sublimation we have to admit that also the nature of artistic attainment is psycho-analytically inaccessible to us."

Many of us would dissent from the suggestion that a knowledge of the personality of an author enables one to enjoy better his works. That such a study can be of great psychiatric interest, that it often explains why an author has chosen particular themes for the content of a work of art, is certainly true; but all this is surely beside the point as far as aesthetic appreciation is concerned. Has aesthetic enjoyment of Wordsworth's poetry been enhanced since we have learnt that he suffered guilt with reference to his illegitimate child in France? Do we experience more delight in reading Dostoievsky's novel, *The Idiot*, after we learn that the author himself suffered from epilepsy and an Oedipus complex, narrowly escaped from being executed, and also possessed a messianic drive? Would we appreciate more intensely Shakespeare's plays if we discovered something more certain about his life history, including his oedipal and sadomasochistic complexes? I believe the replies

are definitely in the negative. A clear distinction should be made between the psychiatric enjoyment of probing an author's complexes and the aesthetic enjoyment of his works of art.

There can be no doubt, as Dr. Brain points out, that one of the reasons why we are drawn to works of art is because we share certain trends (be these dubbed as "normal" or "pathological") with the artist—which is perhaps only another way of saying that the genius is after all also a human being—but the analysis of such trends teaches us exactly nothing concerning the aesthetic value of the artist's creations. An excremental complex can motivate a limerick fit only for a convivial stag party; it may also motivate artistic creation of the highest aesthetic level. Psychopathology gets us nowhere in the appreciation of aesthetic values.—I am, etc.,

Basingstoke. I. ATKIN.

SIR,—May I suggest with all deference that in calling John Donne a psychopath Dr. W. Russell Brain (December 24, 1949, p. 1427) makes a nonsense of that "*néologisme barbare mais expressif*"? Isaak Walton wrote of Donne:

"The melancholy and pleasant humour were in him so contempered, that each gave advantage to the other and made his company one of the delights of mankind. His fancy was inimitably high, equalled only by his great wit; both being made useful by a commanding judgement. His aspect was cheerful, and such as gave a silent testimony of a clear knowing soul, and of a conscience at peace with itself."

This is, surely, as clear a picture of a sane man as any in English. As to Donne's "death wish," Walton specifically states in the same lovely epitaph. "He did much contemplate (especially after he entered into his sacred calling) the mercies of Almighty God, the immortality of the soul, and the joys of heaven." This, one would have thought, was the exact antithesis of an obsession of mortality.

Donne, in common with most of civilized mankind, wished to die well. We in this age tend to go out "not with a bang but a whimper." We should not on that account see perversion in the greater dignity of our forebears.—I am, etc.,

Oxford. CHRISTOPHER OUNSTED.

Scientific Society

SIR,—The flaw in Bertrand Russell's case (December 10, p. 1307) lies in his contemplating resources as constantly diminishing and the demand on them as inevitably increasing. He treats coal and oil (with atomic energy as a stopgap) as the only or main source of energy, and all as being exhaustible. But most of the power we use at present has come from the sun and is still coming and will do so for long enough ahead. Only a small fraction of this energy, in such forms as water-power, is at present being used; in fact, using tidal power is still a dream of the future.

Where fuel for combustion engines is required, the fermentation products of plants grown in areas at present uninhabited because of endemic diseases such as yellow fever and malaria (or at any rate under-populated) is a near possibility. As for raw materials, the recent history of industry has seen the waste products of one decade become the raw materials of the next, and it is hard to see how any mineral on this earth can be really lost to man unless it is shot off into outer space or disintegrated into atomic energy.

The biological argument is just as open to doubt. The well-fed upper classes have for long had a lower reproductive rate (even taking abortion into account) than the rest of the population, while the general fall in the birth rate is only a more recent happening of the last forty years, when food supplies have on the whole been abundant. In many forms of life a high rate of reproduction is a response to adversity; perhaps it is also true of man. Shortage of food was not the cause of the collapse of the great empires of old. It was a softening by luxury which left them overfed and dependent on hired mercenaries to do their fighting.

Next the belief that industry is a luxury compared with agriculture might be true on a South Sea island with abundant coconuts, but a cold climate can kill just as quickly as starvation, so that fuel, clothing, and shelter are essentials, not luxuries, though supply and demand may modify their exchange values. Also, how should the farmer's plough be classified? Is it a product of industry or agriculture? And what about his quick driers, for use when his wireless forecasts bad weather, so that he can harvest his crops quickly?

The psychological argument which comes to the conclusion that a powerful armed international authority is the immovable rock to rest on ignores the many occasions on which the best of rulers have died and the governed have become fed up with the established order of things as upheld by their masters and deposed them in civil wars and revolutions which have been more terrible than external wars, and more destructive of life and property. The way things seem at present, an attempt by either East or West, or some other combination, to impose a world authority will be the most likely start of the next world war. The British Commonwealth of Nations is an example of a group bound together by ties other than a strong central government. It is true that the pressure of the outside world is a concealed unifying factor, but the pressure of the common struggle to harness nature to man's need could serve a like purpose once it were understood.—I am, etc.,

Manchester. S. SHUBSACHS.

Smallpox at 18 Days

SIR,—The occurrence of smallpox in very early infancy seems to be of sufficient interest to warrant noting in your columns.

The subject was an African male child, who was first seen with a typical variola rash on August 2, at the age of 22 days. The first lesions had appeared four days previously. The infant had been delivered by his grandmother, who was staying with the mother, and who had smallpox at the time. She was not seen till the infant was diagnosed, when her lesions had healed but had left pits in a typical distribution. The grandmother, who came from a reserve where there was an epidemic of smallpox, had never been vaccinated, but the mother had been successfully done "many years" previously. The child's rash was typical, and started on the forehead, face, and arms, spreading later to the trunk and legs. The lesions were elliptical, and the vast majority were in the same stage of development. Clinically, the case might be described as severe variola minor. Recovery was complete. The Government Medical Officer, who has had considerable experience of the disease, confirmed the diagnosis.

—I am, etc.,

Que Que, S. Rhodesia. J. M. WARD.

Severity of Scarlet Fever

SIR,—I should like to bring to your notice a case of scarlet fever with an unusual mode of onset.

I first saw the patient—a girl of 3½ years—at 6 p.m. one evening, when she complained of a headache and had a temperature of 102° F. (38.9° C.). There were no abnormal physical signs, and the child was bright and co-operative. When seen at 1 a.m., her temperature was 104° F. (40° C.), pulse uncountable, and respiration 60. She was cyanosed and semi-comatose. On examination, she had coarse crepitations at both bases, with bronchial breathing over the right lower lobe.

She was admitted to Finchley Hospital by 2 a.m. as a case of fulminating lobar pneumonia, put in an oxygen tent and on to full

doses of penicillin. By midday she was still a critically ill child, and Dr. Edward Hart kindly saw her with me. He agreed with the diagnosis and treatment, suggesting that she be given some "cremomerazine" in addition to the penicillin.

The following morning the child's condition was slightly better, but she had developed a scarlatiniform rash which became more marked during the day, until by the evening she appeared to be a case of typical scarlet fever. She was then seen again by Dr. Hart and also by Dr. Montgomery, medical superintendent of the isolation hospital, who agreed that she was a case of scarlet fever, and that she was fit enough to be removed to his hospital. From then on she made an uninterrupted recovery.

One can only presume that this case, instead of commencing with the usual streptococcal throat infection, presented as a streptococcal pneumonia, the organism obviously being of the utmost virulence. Is this mode of onset one that I am unlikely to see again? Are more cases of severe scarlet fever being seen now than during the past few years? I am keen to learn.—I am, etc.,

London, N.12. J. M. PALLOT.

Man and Medicine

SIR,—I am writing to express my appreciation of your reprinting part of Principal T. M. Taylor's graduation address on "Man and Medicine" (December 24, 1949, p. 1466). The emphasis on the pastoral side of medicine is one that needs to be constantly stressed in these materialistic times in which we live.. I recall that only a few years ago Professor Sir Francis Fraser gave it to be his opinion that the modern doctor ought to assume ever increasingly the role of father confessor to his patients, especially if he be a Christian doctor.

It is recorded, I believe, in the memoirs of Sir James Paget that on one occasion the eminent surgeon was on one of his clinical rounds and, on arriving at a house, he saw the parish priest at the bedside of the patient. The priest immediately rose to go on seeing Sir James enter the room, but the great man said he would come back later, as he felt the patient to be deriving as much benefit from the priest's ministrations as he would from his own. It is known that Sir James Paget was a deeply religious man.

The world to-day is both morally and physically sick; it needs the attentions of Christian doctors to minister to its psychopathological state. Some instruction in pastoral theology would not be amiss in the training of the modern doctor, as both Medicine and the Church have been and should always be deeply linked together in their respective operations, remembering the fact that St. Luke is the profession's patron saint.—I am, etc.,

Epsom, Surrey. J. B. GURNEY SMITH.

Use and Abuse of Vitamins

SIR,—Professor L. S. P. Davidson (November 5, p. 1036) shows an almost unassailable logic in his "refresher course" on vitamins, but, whereas man may be a logical animal, men alas are not. It does not follow that, because the food supplies available are more than adequate to meet the vitamin requirements of the population, these requirements are in all cases met. People will eat what their habits have accustomed them to, irrespective of vitamin content, and in spite of the efforts of Government authorities and food and vitamin manufacturers to provide some knowledge of what constitutes a reasonably well balanced diet. That will-o'-the-wisp the average man appears to be hovering in the background of Professor Davidson's article.

The fallacies which may arise in dealing with averages are well illustrated by a consideration of the data of Schor and Swain[1] on food consumption surveys in U.S. Army camps. These data covered about 80,000 men in 44 camps, and frequency distribution curves for intake of the various nutrients were given. For all nutrients except aneurin and ascorbic acid the lowest intake was above National Research Council recommendations, and for all nutrients without exception the average intake was well above these recommendations. Nevertheless the percentages of individuals receiving amounts below the average were 72, 53, 54, 68, and 70 for aneurin, riboflavin, nicotinic acid, ascorbic acid, and vitamin A respectively. Sixty per cent of the population thus received below the average of one or more of the nutrients examined in this survey.

In the case of aneurin, in spite of the fact that the average intake was 10% above the recommended National Research Council amounts, 32% of individuals were receiving less than the recommended amount. If this can occur in a land of plenty, what may not occur in a land of barely enough? If the average consumption in Great Britain is just sufficient to fulfil requirements, there is thus still a possibility that 60% of the population may be deficient.

The Ministry of Food's schemes for feeding the people are no doubt well laid, but the vagaries of the individual are apt to make them "gang agley," for even if the knowledge is available to the individual there is the factor of his "bio chemical individuality" to contend with.—I am, etc.,

London, N.W.10. J. I. M. JONES

REFERENCE
1 *J. Nutrit.*, 1949, **38**, 51.

Chemotherapy in the Treatment of Malignant Disease

SIR,—As the author of articles[1-3] on the treatment of genital carcinoma with the appropriate opposite sex hormone perhaps I may be permitted to comment on Sir Stanford Cade's article (November 26, p. 1193) under this heading. His results in the secondary deposits of breast cancer parallel my own, but it is disappointing to find no reference to the routine implantation of testosterone locally after radical mastectomy, an obvious and very promising procedure. Again, the important role of previous hepatic damage is underestimated, for there is now little doubt that the failure of the liver to destroy excess oestrogen is one of the causes of the hyperoestrogenaemia which is the basis of mammary and endometrial cancer. Much more emphasis must be placed on this deficiency in the liver enzymes, and there is no doubt that their replacement or substitution must form an integral part of cancer therapeutics.

Although it is naturally encouraging to see my suggestions applied so extensively and with such promising results by Sir Stanford Cade, it must be admitted that the basis of testosterone therapy is still very primitive, and enhancement of its action must be sought in the addition of other hormonal and enzymic principles.—I am, etc.,

London, W.1. ALFRED A. LOESER

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1 *British Medical Journal*, 1938, **2**, 319.
2 Ibid., 1940, **1**, 479.
3 *Lancet*, 1941, **2**, 698.

Preventive Medicine in Dentistry

SIR,—For the last three and a half years I have given 200,000 units of sodium penicillin in water intramuscularly about half an hour before the extraction of any teeth with proved root sepsis, on the picturesque, though perhaps unscientific, grounds of producing a net in which disturbed bacteria are caught and obliterated before reaching safety in other distant corners of the body. Practically, I have to presume it works, since there is an absence of the usual malaise in the days following extraction. A woman aged 39 saw me, complaining of increasing pain in the right talonavicular-joint of one month's duration, which, because no particular cause was found, had to be called "rheumatism." *X*-ray examination showed six grossly infected and two mildly infected lower roots, and the dentist decided to remove the six bad ones first. The usual penicillin was given 20 minutes before extraction (under N_2O), and there was no malaise nor alteration in the foot pain. The two mildly infected teeth were removed (under N_2O) three weeks later without preliminary penicillin, extraction being followed by three days' malaise, considerable swelling of the foot, and increase in pain One month later all symptoms had gone.

The following questions arise. (1) Had the six bad teeth any connexion with the "rheumatism"? (2) Did the penicillin prevent a flare up? (3) Had the penicillin no effect, and did the flare up result from a further bacteriaemia during a "negative" phase? I feel that the absence of malaise after preliminary

penicillin plus previous experience rather points to (2) being the logical conclusion. But there is one other question. Does this one case give hope to the supporters of a septic focus in "rheumatism"?—I am, etc.,

Cromer, Norfolk. A. H. GREGSON.

An Unusual Murmur

SIR,—Dr. F. A. Ward (December 10, p. 1353) gives a vivid account of an unusual sound developing suddenly in the chest of a young man, synchronous with the heart beat, at one stage to be heard at some distance from the patient, and, for part of the time, sounding like a steady click. Sometimes, too, there would be unaccountable periods of silence. This sound was accompanied by a throbbing pain, also occurring with the heart beat. Many alternative diagnoses were put forward to account for the phenomenon in this patient, the final one being mediastinal emphysema. The condition, although obviously rare, is, however, one already fully described.

The most recent account I have read is an article entitled "Clicking Pneumothorax" by Dr. A. P. Thompson published in the *Lancet* in 1947 (1, 630). The description there given is quite characteristic of your correspondent's case, with the clicking sound occurring with the heart beat, sometimes to be heard some distance from the chest, and disappearing periodically. Pain, too, is also described in some cases. The cause is attributed with some certainty to a small pneumothorax on the left side, though it is specifically stated that while the pneumothorax can usually be demonstrated by careful radiography it may be so small that this is not always possible. The diagnosis of mediastinal emphysema is discussed, but dismissed as not being the cause.—I am, etc.,

Aylesbury, Bucks. V. LLOYD HART.

Malignant Tertian Malaria

SIR,—I would agree with Dr. P. Ross (October 22, p. 930) that far too much is made of the so-called diverse symptomatology of M.T. malaria. The finding of malaria parasites in the blood of natives living in the highly malarious districts of Victoria Nyanza is of little or no clinical significance.

During 1930, when carrying out an investigation into the incidence of Gambian sleeping sickness in the vicinity of Lake Victoria, I had occasion to examine thousands of thick-blood-drop Giemsa preparations for trypanosomes. Having observed that malaria parasites were present in almost every slide examined, it was decided to investigate the degree of infectivity amongst an unselected batch of 200 of the local population—men, women, and children. To my astonishment 92% were found to have malarial parasites in the peripheral blood, and did not appear to be inconvenienced by the infection.

Sir Gordon Covell (October 8, p. 773) mentions 80 British soldiers who had been evacuated from the vicinity of Lake Victoria to Nairobi during the 1914–18 war; these could easily have been suffering from several varieties of dysentery, from schistosomiasis, and from amoebic hepatitis in addition to their M.T. malaria. Surely those who presented the diverse symptomatology enunciated by Sir Gordon were the victims of delayed diagnosis and treatment. My own experience is that parasites can almost invariably be found in the peripheral blood of primary cases of M.T. malaria during the first few days of fever. The parasites are sometimes very scanty in the peripheral blood of young children exhibiting cerebral symptoms, and in one instance within my recollection the parasite could not be found. A clear C.S.F. and a favourable response to specific antimalarial treatment more than incriminated *P. falciparum*. With this latter exception I have found M.T. malaria a very straightforward type of infection presenting a very well defined clinical picture and very easy to diagnose.

There is therefore no reason why the practitioner going to the Tropics should be confused and bamboozled by classical descriptions of M.T. malaria—pneumonic, algid, bilious, remittent, cardiac, appendicular, dysenteric, and so on. Like Dr. Ross, I have had ample opportunities of observing the behaviour of this disease during a prolonged residence in highly malarious districts of Africa. His advice to practitioners going to the Tropics (October 22, p. 930) is concise and unambiguous, reflecting, as I am sure it does, the experience of many practitioners with long experience of M.T. malaria in tropical countries. To suggest as Sir Philip Manson-Bahr does (November 5, p. 1044) that the presentation of views contrary to the teaching of textbooks would be a betrayal of the truth is one method of arriving at finality and stagnation leading to no increase in our knowledge of malaria. Had Laveran, Grassi, and Ronald Ross been content with the textbook teachings of their day, how much poorer the world would be without their epoch-making discoveries.—I am, etc.,

Ryde, Isle of Wight. N. MCLEAN.

Visceral Actinomycosis

SIR,—I had a patient 20 years ago whose problem was, as Mr. V. Zachary Cope (December 10, p. 1311) says, a difficult one to assess either as regards aetiology or progress. It is a case, too, which does not bear out the view that infection from grass or straw is altogether a "fairy tale," for in my case of actinomycosis the patient (aged about 30) was a greengrocer who stabled and looked after his horse himself, in between delivering his vegetables daily.

This man had an attack which in all respects appeared to be a low-grade type of pneumonia, with low temperature, consolidation of the right lower lobe, and very slow resolution—so slow, in fact, that he was eventually looked upon as an unresolved case of pneumonitis. The bronchial signs were present for several months, with consequent marked debility.

Before the patient had recovered his usual health he began to have trouble with pains in his right iliac fossa; this was diagnosed as subacute appendicitis at Manchester Infirmary, where he eventually was operated on. The operation was unsuccessful, as on incision the hard, woody mass which was discovered and the granules which were present made the diagnosis of actinomycosis of the caecal area obvious. After a very stormy convalescence which lasted for over a year and during which sinuses formed in the right inguinal region below Poupart's ligament and elsewhere, the patient gradually began to get better. His hip flexion, which had slowly increased, began to improve, and the board-like abdominal wall softened.

During this period the only medical treatment was large doses of pot. iod., which the man tolerated very well. Eventually, after a really crippling illness, the disease was eradicated, and except for a slight limp resolution was complete. The patient still sells vegetables, but now has a small car to hawk his wares with.

I wonder if this patient would have passed through such a deadly period if he had never had a horse to look after. In my own mind I am sure that the "unresolved pneumonia" was the origin of his actinomycosis, followed by the abdominal lesion many months later. The whole of the right side of his abdomen must have been riddled with sinuses, which, as in Sir Heneage Ogilvie's case, were directly continuous with thigh or lung through the diaphragm. Or was there a different sequence—sputum coughed up and swallowed reinfecting the caecal area when the chest condition ameliorated?

Truly this is a protean and difficult infection to evaluate and certainly as "ugly a face" as one could wish to see. I am still not too happy about the aetiology, nor am I sure that the older textbooks are still promulgating a fallacious theory.—I am, etc.,

Woodley, Cheshire. J. G. BENNETT

Unusual Case of Arterial Trauma

SIR,—The following case is recorded by virtue of the unusual history and diagnostic interest.

On May 2, 1949, a rifleman aged 32 years was admitted to hospital having sustained an accidental gun-shot wound to the left thigh from a .22 rifle bullet fired at close range. A small entry wound was visible 3 in. (7.5 cm.) below the pubic tubercle and an equally small exit wound was found on the posterior surface of the thigh at a slightly lower level. A moderate-sized haematoma surrounded the bullet track, from which, however, there was very little external haemorrhage. The limb was warm and of good colour. No pulse was detected in either the dorsalis pedis or posterior tibial arteries, although the colour returned readily to skin blanched by digital pressure. Neurological signs were absent, and exercise of the leg

muscles did not produce pain or cramp. The patient was moderately shocked and had a blood pressure of 105/70.

It was decided to adopt an expectant policy, observing the limb continuously for further evidence of vascular trauma. The patient was given morphine and prophylactic penicillin, the limb being elevated and maintained at room temperature. After a few hours the haematoma had not increased in size and the pulse had returned to the arteries at the ankle, thus apparently confirming the diagnosis, made tentatively, of arterial spasm rather than arterial trauma.

During the next ten days the patient appeared to make an uneventful recovery. He was symptom free, the haematoma was absorbing satisfactorily, and the bullet wounds healed. The circulation being unimpaired, the patient was allowed up and began walking gradually. Exercise did not cause symptoms of intermittent claudication or buzzing sensation, and no physical signs such as venous dilatation, cyanosis of the skin, or local tenderness appeared. By the fourth day he was able to climb several flights of stairs without disability of any sort.

On the evening of the fifteenth day after admission and on his fifth day up the patient sneezed and immediately was seized with severe pain in the upper part of the left thigh. A gradually increasing haematoma developed which tracked up under Poupart's ligament. The pulse in the dorsalis pedis and posterior tibial arteries disappeared. The haematoma did not pulsate, nor was a murmur audible.

The patient was immediately operated on under a general anaesthetic, the incision being made over the line of the femoral vessels. Very little old blood clot and a quantity of fresh blood welled up when the fascia overlying Scarpa's triangle was incised. The femoral artery was compressed digitally at the inguinal ligament and the vessels examined. At the level where the femoral artery passes under the sartorius to enter Hunter's canal anterior and posterior perforations were located. These were cleaned out; together they involved the greater part of the circumference of the artery, so that the proximal and distal ends were united by two filaments of vessel wall. No intravascular clot was found. The circulation was controlled above and below the injury and the affected segment excised. An end-to-end anastomosis was performed using Carrel's technique. The incision was closed after ascertaining that the circulation had been established and after injecting the femoral nerve with procaine. A paravertebral block was then carried out and the limb kept elevated and at room temperature. Shortly afterwards a pulse was detected in the posterior tibial artery. The patient's subsequent recovery has been uneventful, and he was finally discharged back to duty with only a temporary lowering of his Pulheems assessment.

Traumatic lesions of the femoral artery are not infrequently seen in civilian practice and must have been seen often during the first and second world wars. Although no intravascular clotting was found in this case it is probable that a thrombus served to arrest the haemorrhage until dislodged a fortnight later by the violence of sneezing.

I am indebted to Lieutenant-Colonel H. K. G. Nash, R.A.M.C., Commanding Officer, General Hospital, BETFOR, for permission to publish this case.

—I am, etc.,

Windsor, Berks. L. I. HATHERLEY.

Acute Phlegmonous Caecitis

SIR,—The report by Mr. Sydney G. Nardell (November 26, 1949, p. 1210) on acute phlegmonous caecitis prompts me to record details of the following case.

A boy aged 11 was admitted to hospital with a diagnosis of appendicitis on November 17, 1949. His temperature was 99.4° F. (37.4° C.), pulse 104, and respirations 22. His condition was good, and general examination revealed no abnormality. His tongue was clean, and there was no muscle rigidity or guarding of the abdomen, which moved well on respiration. Rovsing's sign was negative. He was, however, constantly tender over McBurney's point, and the release sign here was positive. The rectum was ballooned and empty of faeces. The patient was more tender in the left iliac fossa than the right iliac fossa on rectal examination. The urine was clear and acid in reaction. A diagnosis of retrocaecal appendicitis was made.

Operation was performed under a general anaesthetic. The abdomen was opened by a right gridiron incision and a small amount of free serous fluid was found in the peritoneal cavity. An area of the lateral wall of the caecum about 1½ in by ½ in. (3.25 by 1.25 cm.) in size and situated between the anterior and posterolateral taeniae and about 1½ in. from the base of the appendix was found plicated and invaginated into the lumen of the caecum. The caecum was of the infantile type, very mobile, with the appendicular base at its tip. The appendix itself was 4 in. (10 cm.) long and was bound down by old adhesions high up in the retrocaecal space behind the ascending colon. It was not inflamed. The invagination of the caecal wall was reduced, and it was then seen to consist of a diffuse fusiform swelling at no point thicker than ½ in. It was folded on itself so as to form three distinct mounds in the caecal wall with two depressions between them. The surface of this area was roughened and greyish, with punctate haemorrhagic spots. No ulcer or polyp was palpated inside the caecum. No inflamed glands were seen in the ileo-colic angle. The appendix was removed and the abdominal wall closed in layers without drainage.

A post-operative course of penicillin and "sulphamerazine" was given, and the patient was discharged on November 28 symptom free, having made an uninterrupted recovery. He was seen a fortnight later in the out-patient department and was very well. The caecal mass was never at any time palpable through the abdominal wall.

At the time of the operation this was thought to be a partial intussusception of the lateral wall of the caecum of unknown aetiology, and the oedematous thickening of the wall to be a secondary phenomenon. After perusal of Mr. Nardell's report, however, it would seem possible that this might indeed have been a primary acute phlegmonous caecitis and that the apparent intussusception was the result of the differential swelling of the layers of the caecal wall giving rise to plication. Felt in its original folded state rather than after reduction it would have resembled the spheroidal shape described by Mr. Nardell in his two cases.

I wish to thank Mr. F. Forty for his kind permission to report this case.

—I am, etc.,

Edgware, Middlesex. R. F. SHOVE.

The G.P. and E.C.T.

SIR,—Dr. J. L. Faull (December 17, p. 1413) draws attention to the knowledge by patients of the effect of E.C.T. upon their fellows. In private psychiatric practice I have met numerous patients who have told me that they had seen others unconscious and had heard the cries of the patients undergoing the treatment. Although many patients remember nothing, this is not so with all. The acquiescence by some psychiatrists in the unnecessary infliction of mental pain is one of the tragedies of the treatment.

Although I have personally used E.C.T. since 1943 and am still using it in occasional instances, the advent of desoxyephedrine appears to me to make the use of E.C.T. largely avoidable in the cases in which psychotherapy cannot be utilized. In two series of depressives, the one treated with E.C.T. and the other with desoxyephedrine, the improvement rate was precisely similar (*J. ment. Sci.*, 1949, **95**, 920). These series were small, but may I ask those with opportunities of treating cases of depression in their hundreds to continue the investigations on a larger scale?

Should further research confirm the value of desoxyephedrine, the treatment of depressives unable to be dealt with by psychotherapy will lie in the hands of the G.P. (except for the urgent suicidal patient). The G.P. will be able to see the cases before, during, and after therapy, and will be able to commence treatment very early in the depression. Although a number of patients do not appear to dislike E.C.T. and ask for second courses of treatment, others fear it intensely. These will apply for treatment at an earlier stage of their depression if they know that tablet, and not electric, therapy will be administered.

An unfounded fear of preparations of the amphetamine type exists in some members of the medical profession. This fear has developed owing to the enormous doses given, with unfortunate results. For example, Surgeon Lieutenant-Commander G. G. Wallis and Surgeon Lieutenants J. F. McHarg and O. C. A. Scott (December 17, p. 1394) report, as a small dose, the taking of 55 mg. of dextro-amphetamine. In my experience an ordinary commencing dose should not exceed 2.5 mg., a small one being half that amount. Even after the patient has received desoxyephedrine daily for one or two weeks, 10 mg. thrice daily, the last dose not later than midday, should be regarded as the maximum, except in an occasional case who may require more.—I am, etc.,

Bristol. G. DE M. RUDOLF.

Vesico-vaginal Fistulae

SIR,—The flap-splitting technique for the repair of bladder fistulae as used by Mr. Wilfred Shaw in four cases (December 3, 1949, p. 1261) is widely employed. Some gynaecologists go so far as to insist that only this technique with its wide dissection, free mobilization, and closure in layers will lead to cure.

It would be a pity if this one-sided view received too general assent. Closure in one layer—the method of Marion Sims, later developed and described by his assistant J. A. Emmett and more recently discussed by D. Bissell, of the Woman's Hospital, New York—is simpler and from the published accounts seems to give quite as good if not better results than the more extensive flap-splitting operation. Bissell[1] writes, "The principle in the technique first formulated by Sims is more nearly uniformly applicable to the varied forms of vesico-vaginal and urethro-vaginal fistula than any technique used before or since his day," and Gray Ward[2] writes, "When multiple attempts have resulted in failure of the flap-splitting technique, I have found Sims's operation with silver wire sutures often successful." When experts write in such terms I wonder why it is not the method of choice unless special circumstances require some other method.

In this country Chassar Moir has championed the Sims technique, describing the flap-splitting technique in the majority of cases as "needlessly drastic and difficult," and his record of 50 cases of fistula all closed has never been equalled.[3] I have operated on only 11 cases of fistula, yet with this limited experience eight of them were successfully closed by the Sims method at the first attempt (one had had nine previous unsuccessful attempts at repair, and three involved or were adjacent to the urethra). Of the remaining three cases, two followed radium and were closed by a high partial colpocleisis as described by Latzko,[4] and one—a vesico-cervical fistula—was closed in layers.—I am, etc.,

Manchester. C. SCOTT RUSSELL.

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1 *Amer. J. Surg.*, 1929, n.s. 7, 143.
2 *J. Mt Sinai Hosp.*, 1943, 10, 176.
3 Kerr, J. M. M., and Moir, J. C., *Operative Obstetrics*, 1949, London, p. 861.
4 *Amer. J. Surg.*, 1942, 58, 211.

Intestinal Obstruction as Appendix Abscess

SIR,—Mr. F. D. Hindmarsh's note on two cases of intestinal obstruction, both of which had a diagnosis of appendix abscess made on admission (December 3, p. 1274), prompts me to record two cases of intestinal obstruction which were also initially diagnosed as appendix abscesses.

Case 1.—A woman aged 53 was admitted to Chase Farm Hospital, Enfield, on January 15, 1944. She gave a 24-hours' history of generalized abdominal pain followed by vomiting on two or three occasions. The bowels were last opened 24 hours before admission. Shortly before admission the pain was much easier and she had no further vomiting.

On examination, the temperature was 99.2° F. (37.3° C.) and pulse rate 76. She was not dehydrated. She had a well-defined tender mass in the right iliac fossa which appeared to be arising from the pelvis. A mass could be felt in the right side of the pelvis on rectal examination.

A tentative diagnosis of appendix abscess was made and she was treated expectantly. Two days later she had a white blood count of 17,800, of which 93% were polymorphs. Her general condition deteriorated, however. Her abdomen became progressively distended and she began vomiting. Laparotomy was decided upon, and this was performed on January 18. There was much blood-stained fluid, and a loop of gangrenous small bowel strangulated by a band was found in the right iliac fossa. The band was divided and 18 in. (45.7 cm.) of ileum was resected, continuity being restored by end-to-end anastomosis. The abdomen was closed in layers and drained.

Convalescence was stormy. Paralytic ileus developed; this responded to continuous gastro-intestinal suction, morphine, and intravenous therapy, and eventually the patient made a complete recovery, being discharged home on March 4, 1944.

Case 2.—A man of 66 was admitted to St. Mary Islington Hospital on June 4, 1946, with a 20-hours' history of generalized abdominal pain which six hours later settled in the right iliac fossa. He vomited several times. His bowels were last opened on the day prior to admission.

On examination, his general condition was good. His temperature was 99° F. (37.2° C.) and pulse rate 120. The tongue was dry and furred. He vomited during the examination. There was lower abdominal tenderness, maximal in the right iliac fossa, where a mass was felt just above the inguinal ligament. No increased bowel sounds were heard.

The abdomen was opened under spinal analgesia. There was some free fluid. A loop of terminal ileum about 12 in. (30.5 cm.) long was found to be gangrenous, the cause of this being strangulation by a band. The band was divided and the gangrenous segment of bowel resected. The ends were closed and invaginated, and side-to-side anastomosis was performed between ileum and caecum. The abdomen was closed in layers and drained.

Post-operatively he was given intravenous fluids and kept on continuous gastric suction for 48 hours. He made a good recovery which was only temporarily interrupted by the development of a left submandibular abscess requiring incision and drainage.

Both these cases present very similar features. The first case was justifiably considered to be an appendix abscess in the first place, though the short history was rather against it. It was only the recurrence of vomiting and appearance of abdominal distension two days after admission which made exploration imperative. In the second case, although an initial diagnosis of appendix abscess was made, again the short history and constipation were rather against this. Furthermore, vomiting was a prominent feature, a symptom which usually only occurs at the onset of appendicitis.—I am, etc.,

Haslemere. D. A. C. REID.

Resettlement of the Tuberculous

SIR,—The letter of Dr. R. Hardy (December 17, 1949, p. 1417) recalls the last bit of advice given by a K.C. to a budding barrister—". . . and then when you have no case abuse your opponent." Are we aiming (*a*) to eradicate tuberculosis, or (*b*) to ensure that the infection remains endemic among us? How did our ancestors eradicate leprosy? Their methods may have followed unhumane paths to unhallowed death—but they were effective. They recognized the seed to be more important than the soil.—I am, etc.,

Lossiemouth, Moray. EDGAR L. COLLIS.

A Shot-filled Appendix

SIR,—The presence of multiple lead shot in the appendix, as described by Dr. C. Eppel (December 24, 1949, p. 1454), although certainly very uncommon, is not unique, as I came across a similar case ten years ago. This was an elderly landowner who was keen on shooting and had consumed game for many years. The condition became apparent on a radiograph taken for osteo-arthritis of the hip-joints, the patient being aware of it as the result of a similar examination five years previously. He was, in fact, very proud of his remarkable appendix and kept a film for demonstration to his friends.

On palpation the appendix showed lack of mobility, but was not tender, and up to the present time there have never been any symptoms referred to it. This fact, combined with the minor histological changes found in Dr. Eppel's case, suggests that in the latter the mechanical effect of the shot in the appendix was not the sole cause of the symptoms. It is conceivable that these may have been at least partly due to the absorption of lead in a susceptible individual, although there was no clinical evidence of this in my case.—I am, etc.,

Dorchester, Dorset. J. A. G. F. ROSE.

Aetiology of Erythema Nodosum

SIR,—Dr. M. Dunlevy (November 12, 1949, p. 1114) asks about the incidence of erythema nodosum in cases of tuberculous infection. Unfortunately I am not able to give any figures, as my material was not collected in a tuberculosis clinic but in two children's clinics serving a very big area. I can confirm his observation that the eruption of erythema nodosum may precede the appearance of radiological evidence of primary tuberculous infection by one to three months. I observed this occurrence twice in my series of 100 cases.—I am, etc.,

Sheffield. S. DOXIADIS.

Total Cystectomy

SIR,—In one of your annotations (November 26, 1949, p. 1220) you deal with total cystectomy. May I draw your attention to the original article by Messrs. Terence Millin and F. Masina on total cystectomy which was published in the June number of the *British Journal of Urology* (1949, **21**, 108)? The article deals exhaustively with the technique of total cystectomy. In 43 operations for total cystectomy Mr. Millin had a mortality of 2.4%. In the forthcoming number of the *British Journal of Urology* we are publishing an article by Cuthbert Dukes and F. Masina on the "Classification of Epithelial Tumours of the Bladder." I am sure you will agree that these two articles by British authors together make an outstanding contribution to urological literature.—I am, etc.,

Edinburgh. DAVID BAND,
Editor, British Journal of Urology.

Selection of Students

SIR,—Might I, as a prospective medical student, put in a plea for a centralized method of selection for students wishing to enter a medical school? As the position now stands it is almost impossible to obtain a place without applying to about a dozen schools. From the student's viewpoint this is probably unimportant—his main object is to be accepted. But from the viewpoint of the medical schools it must involve a considerable amount of tedious work selecting students when it is known that only a very small proportion of the applicants can ever be accepted.

The suggestion I should like to put, therefore, is for a central selection committee, jointly sponsored and staffed by the various medical colleges in London, to which application by intending medical students could be made direct. Examination by such a committee could be made very thorough and comparable to the Army selection board for officer candidates, which was found a very efficient system for assessing candidates' capabilities and potentialities.—I am, etc.,

EDWIN R. NYE.

Fifty Years of Medicine

SIR,—May I comment upon contributions in two recent issues of the *Journal*? First, I am delighted that Dr. Douglas Gairdner (December 24, 1949, p. 1433) has written so scientifically and convincingly upon the "Fate of the Foreskin." I continue to be distressed by persistent nagging from nursing staffs, and from the parents they have influenced, to "do something about the foreskin."

Secondly, much though I appreciate your splendid series of articles in the issue entitled "Fifty Years of Medicine" (January 7) I must contrast unfavourably the absence of any comment upon "fifty years of general practice" with the pointed and striking remarks of Professor R. Platt in this month's *Practitioner* (p. 72). I would like to quote his final sentences:

"It is right that students should see the modern methods of diagnosis and treatment in hospital at the hands of experts, but it is quite wrong that they should see nothing else and that they should have no training which will fit them for general practice and give them the ambition to be practitioners of the highest standard. General practice is still a very great art. In spite of all modern methods, diagnosis still rests, in the first instance, on accurate history taking, and the biggest difference between a good doctor and a bad one is the way in which he takes a history. But at the present time there is no one to teach general practice; there is no one to set a standard for general practice; there is no place where a practitioner can come and see what are the current trends in modern general practice. It is time that we remedied this very serious flaw in medical education."

Some of us who are attempting to remedy this are distressed by the insistence of teaching schools and of journals in ignoring the training needs of the general practitioner. Neither of my trainee-assistants (one a man from a famous London teaching hospital, the other a woman from a provincial teaching hospital) had ever seen chloroform administered. Neither of them had passed a catheter, and, which is much worse, they had been taught that to do so in a labouring woman was easy.—I am, etc.,

York. F. CHARLOTTE NAISH.

POINTS FROM LETTERS

Sanatorium Beds

Dr. C. F. HINGSTON (London, N.W.3) writes: I feel that it is time that the question of sanatorium beds should be raised again. The first bottle-neck, which is not emphasized enough, is due to the delay in obtaining beds for patients needing adhesion section or thoracoplasty. This is particularly acute in small sanatoria without surgical units which rely on other institutions for this part of their treatment. A year on the waiting-list for thoracoplasty is being accepted with too much complacency. The time before adhesion section can be carried out is slowly lengthening also, and thus prejudicing the chances of many young people with only limited disease. Streptomycin and P.A.S., it seems, are bringing a few more cases to the surgeon and thus narrowing the bottle-neck still more. An acute problem is often whether to give chemotherapy to a toxic case in the hope of improving the general condition prior to surgical treatment or to abandon this idea because a bed would not be available even if the improvement did take place. Poor organization is holding up treatment and wasting beds. . . .

Animal Experiments

Dr. M. BEDDOW BAYLY (Camberley, Surrey) writes: I feel sure Dr. M. C. Rothcope's views (December 10, 1949, p. 1356) as to the increase during recent years of experiments on animals which give "genuine cause for disquiet" must be endorsed by more medical men throughout the country than many would suppose. A number of writers called attention in the *Lancet* (August 6, 1949, p. 259) to experiments which they stigmatized as "shocking to a normal human conscience," and invited scientists to join with them in condemning them. The accounts of the type of experiment they described seem usually to emanate from Canadian and American laboratories, and it is often assumed that they could not take place in this country under the conditions imposed by the Cruelty to Animals Act, 1876. This is, I believe, a mistaken notion. . . . At all events, one is left with the feeling, I think, that there is in this country a sensitivity of conscience in the matter of inflicting pain upon experimental animals which appears to be entirely lacking elsewhere. . . . It is well to recollect in this connexion that it was in the editorials of the *British Medical Journal* and the *Lancet* that the first protests against forms of Continental vivisection appeared in the early 'sixties of last century.

Dr. E. H. EASON (Bewdley, Worcs) writes: I was interested to see that in your annotation on animal experiments (December 31, 1949, p. 1518) you support the view that no good reason exists for making a distinction between dogs and rats where the causation of pain during experiments is concerned. Whereas it is to be hoped that few people in this country would approve of the treatment meted out to rats in Canada by Professor Hans Selye in a recently reported series of experiments (November 19, 1949, p. 1129), surely the dog has earned his status as a favoured species? If, as you suggest, such a view is irrational, it is hard to defend the rationality of regarding man as an even more favoured species.

Authors and Psychopaths

Dr. W. A. BELLAMY (Aylesbury, Bucks) writes: Dr. W. Russell Brain's article (December 24, 1949, p. 1427) contains one very sweeping statement: "Dickens's . . . sado-masochism . . . runs like a scarlet thread through all his writings." Dr. Brain supports this by quoting various historical scenes of violence described by Dickens. But surely historians—and Dickens was a historian as well as a novelist—have to portray history as it was. And as the black spots of our history, and those of any country, reek of cruelty, why should any historian who describes them be accused of sado-masochism? Again, Dickens's horrific fictional characters are held up as an example of this trait of the author. Why? Are all the hundreds of writers of mystery thrillers, which generally begin with a murder and end with a hanging, included in this category?

Spoons as a Measure

Mr. L. M. SPALTON, M.P.S. (Loughborough, Leics.), writes: I was particularly interested in the remarks of Dr. J. M. Hamill (November 19, p. 1180) on this subject. Variations in the capacity of tablespoons and teaspoons used for the administration of medicine are, in my opinion, not sufficiently widely appreciated by doctors and pharmacists. I recently investigated the capacity of a number of teaspoons and tablespoons, and some of your readers may be interested in the results, which were published in the *Pharmaceutical Journal* (1949, **162**, 338).

Obituary

A. G. GIBSON, D.M., F.R.C.P.

Dr. Alexander George Gibson died on January 11 at his home in Oxford, at the age of 74. Born in Yorkshire in 1875, he was educated at University College, Aberystwyth, Christ Church, Oxford, and St. Thomas's Hospital, where he held a house appointment.

Dr. Gibson's lifelong association with Oxford began in 1904, when, after graduating B.M., he was appointed house-physician to the Radcliffe Infirmary and County Hospital—as it then was—in succession to E. C. B. Evers, now chairman of the board of governors of the United Oxford Hospitals. Thus he was the forerunner of many outstanding Thomas's men who have done much to raise the Oxford medical school to the position it now holds. In 1905 he obtained his M.R.C.P., and he proceeded D.M. in 1908. He was elected F.R.C.P. in 1913, and in 1928 delivered the Bradshaw Lecture on pyelitis and pyelonephritis. From 1931 to 1943 he was, in turn, councillor, examiner, and censor at the Royal College of Physicians.

When in 1904 Gibson settled in Oxford he was brought into contact with James Ritchie, reader in pathology, later professor, and also one of the physicians to the Radcliffe Infirmary, and with Burdon Sanderson, the regius professor of medicine, whom Osler succeeded the following year. Gibson's association with Osler was a particularly happy one, and over the years until the latter's death in 1919 he acquired a certain number of mannerisms from the regius professor, whom, incidentally, he attended in his last illness. In the early days of his professional career Gibson had a small general practice in addition to being engaged on pathological work in the University museum and at the Radcliffe Infirmary. Soon he embarked on consultant practice, becoming particularly interested in cardiology and doing pioneer work in this specialty. He was responsible for first describing the third heart sound in a paper which was published in 1907 in the *Lancet*.

Gibson was appointed physician to the Radcliffe Infirmary in 1919, and was on several occasions Litchfield lecturer in medicine. There can be few Oxford men who graduated between the wars who do not owe a very great deal to him. He was a man of sound, steady, and reliable judgment, a stimulating teacher with a profound mastery of his subject. His demonstrations on morbid anatomy were a model of clarity. Completely devoid of any suggestion of self before service, he was constantly solicitous of the interests and progress of his pupils. At the same time he was an unobtrusively strict disciplinarian, but always fair. He was one of the last of his type, combining as he did the practice of medicine in the wards and out-patient hall with the posts of pathologist to the hospital and university demonstrator, later Nuffield reader, in pathology. He had thus the inestimable advantage of being able to correlate clinical and post-mortem findings, and as a result his diagnoses were remarkable in their accuracy.

Dr. Gibson made many contributions to medical literature, and he was one of the editors of the *Quarterly Journal of Medicine*. His book on the Radcliffe Infirmary, published in 1926, is written obviously with affectionate regard for the hospital, its benefactors, and its staff. He was a member of the Royal Society of Medicine, of the Medical Pilgrims Club, of the Association of Physicians, and of the Cardiological Society. He attended regularly the meetings of the Oxford Division of the British Medical Association, of which he was chairman in 1933. When the Association met in Oxford in 1936 Gibson was president of the Section of Medicine. He had also been president of the Oxford Medical Society. He was instrumental in founding the Oxford Clinical Club, on which were represented all interests in the local medical profession—general practitioners, research workers, consultants, and specialists in all branches. The fortnightly meetings at 27, Banbury Road, were a source of inspiration and help to all the members.

Both as a family physician and as a consultant Gibson was invariably kindly, patient, and quiet in manner. Modest, shy, and retiring, there was no room in his make-up for any suggestion of verbiage or pomposity. As soon as he entered the sick room, anxiety was allayed. Medical charities were ever close to his heart, and over many years he accumulated considerable sums for the Royal Medical Benevolent Fund and for Epsom College. In his leisure moments Gibson could generally be found at work in his garden, for which he had a great affection.

Gibson's health was much affected by the tragic death of his wife in 1942, and for the last five years he had been bedridden, following a cerebral haemorrhage. He leaves two sons, both members of the medical profession, and one daughter, who throughout his long period of invalidism and incapacity was a great comfort to her father.—W. S.

D. G. GREENFIELD, M.D., F.R.C.S.

Dr. Dudley George Greenfield, who died on January 11 at the age of 71 after a six months' illness patiently and bravely borne, was an outstanding family doctor. After service in the South African War, he graduated M.B., B.S. from Guy's Hospital in 1901 and proceeded M.D. in 1902. He was for a time editor of *Guy's Hospital Gazette*. He took the F.R.C.S. in 1903, and his great interest in surgery might have led to a distinguished surgical career. He held in succession appointments as house-physician, house-surgeon, and clinical assistant at Guy's Hospital. He decided, however, to take up general practice, and settled in Northamptonshire, first as assistant and then in partnership with the late Dr. Crew, of Higham Ferrers. He soon established his own practice in the neighbouring town of Rushden, where, apart from service in France in the 1914–18 war, he was to remain until his retirement in 1946.

Dr. Greenfield was a man of wide culture and interests, and his home, built to his own design, was beautiful, with fine old furniture and a garden which he never tired of tending. His love of music will be remembered by many of the people of Rushden because of the excellent work he put in during his early years as choir-master of the parish church. He was an accomplished artist in water colours, and, continually striving to improve his work, he even took lessons after his retirement. Dr. Greenfield always had the interests of his colleagues at heart. He served on the Council of the British Medical Association in 1926–7, the Insurance Acts Committee, the Medical Planning Commission, the local B.M.A. Branch Council, the Local Medical Committee, and recently the Executive Council. He was chairman of the Northampton Division in 1931–2 and president of the Northamptonshire Branch in 1932–3. He did invaluable work in organizing collections for medical charities in Northamptonshire, taking pains to make personal appeals to as many practitioners as possible. He was also a member of the Urban District Council for twelve years and a churchwarden for fifteen years.

O. B. L. writes: It was my very great privilege to work with Dr. Greenfield as assistant and partner for close on twenty years, and—as did all those who worked with him—

I came to value his friendship and guidance in the highest degree. He was indeed loved by his patients, though some found him bluff, and he did not always suffer fools, or those inclined to swing the lead, gladly. Sorrow came in his later years. In 1938 his only son, just starting as a medical student at Guy's, was struck down by malignant disease, which nine years later claimed his wife also. He married again in December, 1948, but after only six months the insidious disease declared itself in him whilst he was on holiday in Sark. Greenfield led a full and really useful life. He never spared himself, but he appreciated the good things, whether of fellowship, the arts, or the table, and his death will mean a very real personal loss to many.

Mr. A. R. Banham writes: The death of Dr. D. G. Greenfield will cause much grief and will leave many gaps in Northamptonshire. He was a man of outstanding ability and enormous energy who found time for many activities in addition to his full share of work in a large and successful practice. A regular churchgoer and churchwarden, he had a deep spiritual kindliness of heart and a generous friendliness which he took into all his work. He suffered more than his fair share of private sorrows, which he bore with the utmost fortitude. His professional skill was of the highest quality, but he was much more than a doctor to his patients—he was their adviser, comforter, and friend. In the counsels of the profession he will be greatly missed. To many at times he must have seemed to be the Northamptonshire Branch of the B.M.A., for he brought to local meetings a valuable knowledge of the central affairs of the Association and a gift of ready speech. We will long recall him puffing gently at his pipe until the time came when he could sum up the discussion lucidly, or steer it back to the main channel from a backwater of unessential detail. He quickly saw the vital point of any subject, and he never shirked the difficulties of unpopular topics. He always worked for, and spoke for, what he believed to be the real interests of the profession. His generous and friendly character is well exemplified by his work for the Northamptonshire Medical Charity and by the tennis parties he regularly gave. To the former he devoted much time and ability so that his county could be foremost in medical benevolence. Many will remember his tennis parties to which he invited a judicious blending of consultants, general practitioners, dental surgeons, and his lay friends. He played well and enjoyed a keen game, but his greatest pleasure was derived from watching others enjoy themselves. He was a "good mixer," and he used his own ability in establishing friendly relations between all branches of the profession and the laity of the county. Both alike will mourn the loss of a real friend and a great-hearted man.

R. A. McC. writes: As one who was associated with Dudley Greenfield in practice for 24 years, I should like to add my humble testimony to those written by more able pens than mine. When I joined Greenfield in 1922 he had already built up a successful general practice in Northamptonshire and was considered to be one of the ablest medical men in the county. He was a fine physician, an able surgeon, a good obstetrician, and the friend of all. He was well qualified to advise both physically and spiritually. At one time he was asked to consider applying for appointment to the staff of the Northampton Hospital and to seek consultant practice, on the grounds that his qualifications were too good for a general practitioner. He refused because it was his opinion that no man is too good for general practice. He was a good churchman, a fine water-colour painter, an enthusiastic gardener, and a great lover of the "out-of-doors." When I last saw him, a month before his death, he said to me, "You and I worked together for 24 years without a cross word." This was no more than the truth, for he was a man with whom one could not quarrel. I have never seen him angry, and his kindness in severe illness was proverbial. He did much work for the B.M.A., and collected large sums for medical charities every year by sheer hard work, calling on every doctor in the county to appeal for funds. His own life of late years was saddened by bereavement. He retired from practice in 1946, but his wife's death the next year left him a rapidly ageing man. He bore the knowledge of his approaching death with the courage and philosophy which were expected by everyone who really knew him. The world could do with more like him.

Dr. JOHN WALTER PRIDMORE died suddenly at his home in the Isle of Wight on November 3 at the age of 79. A student at Birmingham University and at University College Hospital, he qualified in 1896 and saw service with the South African Field Force as a civil surgeon in 1900-2. For a time he was a resident surgical assistant at the Queen's Hospital, Birmingham, and he was later assistant medical officer at Camberwell Infirmary and at Dulwich. Dr. Pridmore was a painstaking surgeon, a skilful obstetrician, and a good, sound general practitioner. He was a staunch churchman and a keen Freemason. He had been interested in B.M.A. work for many years and he was chairman of the Isle of Wight Division in 1923.

Dr. L. Firman-Edwards writes: The passing of John Walter Pridmore, while relieving him of the burden of blindness which he so patiently bore, has left his friends—among whom I am proud to have been numbered—with a sense of acute loss. As his partner and colleague for twenty-five years I had ample opportunity to observe his thoroughness and conscientiousness as a physician and surgeon, his innate kindness hidden often under a gruff exterior, for he hated to have any of his generous acts brought to light, and his common sense salted with humour. A loyal friend and an honourable opponent, he detested humbug or underhand dealing, and never hesitated to plunge into the fray if he detected it. He was shrewd but kindly, his advice was sound, and he never spared himself to give of his best. He always recognized his limitations and sought other advice if necessary, but he was never satisfied with less than the best that could be done for his patients and was severely critical of his own and other men's treatment of them. In his private life he had firm and rigid principles with which he would never compromise, and I never knew him to do a mean action.

Dr. AUGUSTINE FITZGERALD STUDDERT, of Belmullet, Co Mayo, died on November 19 within a few days of his seventy-eighth birthday. He studied medicine at the Royal College of Surgeons in Dublin, qualifying in 1899. After working for a short time in England he came to Belmullet in 1902 as Admiralty surgeon and agent. In this capacity he had the medical care of the coastguards in the district until the stations were closed down with the setting up of the Free State in 1922. Since 1918 he had also been medical officer of Knocknalower dispensary district, a mountainous area with a scattered population, where his work involved many arduous journeys by bicycle and on foot. Dr. Studdert had served the Irish Lights Commission since 1925, looking after the lighthouse keepers and their families. During the first world war he joined the R.A.M.C. and served in Malta and at home. Since then he had given much time to the work of the British Legion. A keen sportsman, he found time in his younger days for hunting, fishing, and shooting, but of late his activities were much restricted by arthritis, a disability which he bore with a courage and good humour not readily to be forgotten. His love of children and his sense of humour found expression in two books, *Untrue Stories*, published by the Oxford University Press, and a volume of light verse, *Odd Ditties*. A sincere Christian, his whole life was imbued with a spirit of selflessness and kindness which made him beloved by all who knew him. —M. F. T.

Dr. ROBERT CAMERON died in the King Edward VII Sanatorium, Midhurst, on November 25, 1949. Born at Clydebank, he passed his boyhood at Old Kilpatrick, Dunbartonshire, and was educated at Gavinburn School, Clydebank High School, and Glasgow University. He graduated M.B., Ch.B. in 1931, and after an appointment as house-physician at Cheltenham General Hospital he held assistantships in general practice in Newport, Monmouthshire, and Llanbradach, Glamorgan. However, he decided not to continue in general practice, and he took the D.P.H. of Cardiff in 1935. He was then appointed assistant M.O.H. and resident medical officer to the Burton Road Hospital in Lincoln. Here Dr. Cameron did most valuable work for over four years, and he proceeded M.D. in 1940. In the following year he was appointed medical superintendent of the County Hospital (E.M.S.), Cambridge, and there he worked throughout the war and until he was called up as a medical specialist in 1946. He was posted to the Military Hospital, Chester, and was in charge of the medical division there till the onset in January, 1948, of the illness which was to prove fatal. A keen physician, Robert Cameron overworked at every appointment he held. Having fruitlessly applied to be allowed to relinquish his E.M.S. duties and enter one of the Services during the war, he accepted his eventual calling up after the war with enthusiasm, and thoroughly enjoyed his brief period of military service. He endured his long illness with cheerfulness and courage, and its sudden and unexpected termination was a severe blow to his family and friends. He leaves a widow and two young sons.—F. B. L.

Dr. JAMES MCDONALD, who died at his home on December 6, 1949, at the age of 82, was one of the oldest and most esteemed practitioners in Northumberland. Born at Lochee, near Dundee, he began his career by qualifying as a pharmaceutical chemist, but later decided to enter the medical profession. He graduated M.B., C.M. at Edinburgh in 1892, and, after acting as an assistant in Old Cumnoch, settled in Belford in 1894, and continued in practice there for more than 55 years. In 1912 he proceeded M.D., which meant that he had to pass the university preliminary examination in Greek, a subject which he studied then for the first time, despite ever-increasing family responsibilities and the demands of a busy and widely scattered practice. James McDonald was a man of outstanding personality, with high ideals which he applied to his daily life. He was steadfast in purpose and firm in principle, unhesitatingly taking the course dictated by his conscience, and never sparing himself in the fulfilment of his social and professional duties. He was proud of the traditions and jealous of the reputation of his profession, and, although his more than half a century of country practice was marked by legislation which threatened the finer side of the doctor–patient relationship, he was unremitting in his intimate and friendly interest in his patients. By his skill, devotion to duty, mature wisdom, human sympathy, and understanding he won the affection, esteem, and confidence of his many patients and friends. A sound clinician, who kept abreast of the times, his opinion and judgment on a case were accepted with respect by his colleagues. Keenly interested in agricultural matters, he was welcomed as an expert adviser and friendly critic by the farming community, and came to be regarded as the Nestor of the village. Though of a somewhat retiring nature and preferring his fireside and books to public life, James McDonald took an active part in administrative work. He was a member of the Northumberland Panel Committee from its inception and chairman from 1934 to 1948. It was during the latter period that he displayed outstanding qualities in guiding and assisting the deliberations and decisions of this committee before and during the introduction of the National Health Service. He served for many years on the National Health Insurance Committee and subsequently on the Northumberland Executive Council. A lifelong member of the B.M.A., he was chairman of the North Northumberland Division, and on several occasions a representative at the A.R.M. In 1927 he was made a J.P. and sat regularly on the Bamburghshire bench, of which he was vice-chairman. He was an elder of the Presbyterian Church for 48 years and for the past 15 years had held the office of session clerk. His wife died in 1939, and he is survived by five sons and a daughter, all graduates of Edinburgh University.—H. S. B.

Dr. JOHN SPENCE LAW, who died in Norwich on December 23, 1949, at the age of 87, was for over twenty-five years assistant medical officer and deputy medical superintendent at St. Andrew's Mental Hospital, Thorpe, Norwich. Working under Dr. David Thomson, he acquired an excellent knowledge of mental diseases. His shrewd common sense enabled him to deal satisfactorily with all types of cases. He was never at a loss to know how to act in any emergency, and he could be relied upon to do his best for any patient entrusted to his care. Dr. Law was educated at the same school as Sir James Barrie, with whom he was fellow student at the University of Edinburgh. He qualified M.B., C.M. in 1883. In 1915, when the War Office took over St. Andrew's Hospital, he held the rank of major, R.A.M.C. He retired from active specialist practice in 1919. During his retirement he lived at Lowestoft, and was an active member of the Royal Norfolk and Suffolk Yacht Club. He was an enthusiastic bridge player, and was specially interested in both cricket and golf. In his early days at St. Andrew's Hospital he kept goal for the Thorpe Football Club. During his retirement Dr. Law, who was a bachelor, spent most of his time in Lowestoft, and enjoyed a holiday in Italy each year.

Dr. Agnes Savill writes: The tributes to Dr. JUSTINA WILSON were indeed deserved (January 14, p. 132). She was the most remarkable medical woman I ever worked with. Her knowledge appeared so wide that one came to regard her as an encyclopaedia. When travelling with her in Germany about 1926 several distinguished German physicians told me that they had at first supposed that she was a German, so great was her knowledge of their language. During the electrotherapeutic meeting held in London in association with French physicians she read papers and joined in the discussions as readily as if she were a Frenchwoman. The study of languages is not usual with British physicians. She was the first to introduce short-wave diathermy in her hospital clinic. As soon as Schliepake's book was published she travelled by air to discuss the future of the new apparatus with him, and ordered several machines; she was working with three of these till the last year of her life. She was so many-sided in her interests that one was always astonished by unexpected experiences when conversing with her. About 1927 I took her to hear Albert Coates conducting *Kitesh* at Covent Garden. She sat silent, with eyes closed; I supposed that she had fallen asleep. Suddenly she turned to me, abruptly remarking: "Who is this conductor? He is obtaining very excellent playing from this orchestra." Later, I learned that at one period of her life she had acted as musical critic at Bayreuth for the best Indian newspaper. Homoeopathy she knew much about; she constantly referred to a huge tome on the subject, and claimed that she often obtained cures in various psychological conditions which did not respond to more well-known methods of treatment. During the last years of the war she still conducted a large practice and travelled every week-end to see her invalid husband at Eastbourne; there she cooked for him dainty meals to induce appetite when our diet was at its most monotonous stage. She knew the Bible from end to end, and could quote long passages from the psalms which gave comfort to many during the darkness of the air-raids over London. Her vivacity and social experience in youth gave her unique advantages with friends and patients drawn from every rank of life. Indeed, "Age did not wither her, nor custom stale her infinite variety."

W.M.S. writes: To all of us who knew him the untimely passing of THOMAS ALBERT HINDMARSH (*Journal*, December 24, 1949, p. 1475) has come as a loss, irreparable and inconsolable. His great surgical ability, his flair for accurate diagnosis, and his unfailing courtesy were known by all and were so freely given to all. By day and by night he gave of his best, cheerfully and willingly, without thought of recompense or reward. Simple and sincere, gifted far above the average, meeting all kinds with easy grace, inspiring confidence in the sure knowledge of his gifts, he was the Northerner and the Northumbrian at his best. These and others of his many virtues will for all time remain deeply engraved in our memories of one who was a truly great and lovable man.

Medico-Legal

MURDER AND INSANITY

LORD GODDARD'S VIEWS

Lord Goddard, the Lord Chief Justice, appeared as principal witness before a public session of the Royal Commission on Capital Punishment on January 5. The Commission, under the chairman, Sir Ernest Gowers, heard the Lord Chief Justice criticize the use made of Section 2 (4) of the Criminal Lunatics Act.[1]

In a long memorandum put before the Commission Lord Goddard said that on the whole, with one exception relating to what was generally called constructive murder, or more accurately constructive malice, the existing law was satisfactory. Assuming that in strict law any unintentional killing in the course of committing a felony was murder, a modern judge would always direct a jury to find manslaughter only, unless the felony was one involving violence. If a man used violence towards a woman he was attempting to rape or to a man he was attempting to rob, the picture presented was very different. Should the Commission hold that more precise definition was desirable—for which there was much to be said—one could not do better than adopt that contained in the draft code approved by the Criminal Law Commissioners in 1879. The code would confine the doctrine relating to killing in the course of committing a felony to those felonies involving violence—not in express terms, but that was the effect.

Where death was caused as the result of procuring an abortion it was now the invariable practice to make a charge of manslaughter only, although procuring abortion was a felony. That always seemed a striking instance of judge-made law, difficult to justify on the authorities, though no doubt beneficial and reasonable. It did suggest that there might be different and complicated considerations according to whether the abortioner was a qualified or unqualified practitioner. Most if not all of the difficulty would be removed if the law with regard to killing in the course of committing a felony could be amended.

The Issue of Insanity

On the question of insanity Lord Goddard said that a murderer who was found to be insane would not suffer capital punishment. Moreover, if a person became insane after conviction but before execution, he was always reprieved. He wanted it to be clearly understood that he did not desire in the slightest degree to impugn or fetter the Royal prerogative, but what deserved consideration was the construction that had been put on Section 2 (4) of the Criminal Lunatics Act, 1884, and the use that had been made of it in a way which appeared to strike at the root of trial by jury.

Over and over again where the issue of insanity had been tried and decided by a jury who had found the prisoner sane, an inquiry had been held under that section, in private, with no representation of the prosecution or the convict, by persons who were not guided by a judge and who need give no reasons for their findings, with the result that the verdict of the jury was reversed. In his view it was never intended that the section should give that power, and on a true construction it did not give it. It was intended to provide for the case of a convict becoming insane after conviction and before execution, and to deal with any case in which the issue of insanity was never raised at the trial.

Explaining some of the reasons for his views, Lord Goddard said that sometimes in trials the medical evidence given by the defence was so weak that the prosecution did not call medical evidence in rebuttal. The recent case of Haigh illustrated this point. In other cases, and probably the majority, the prison doctor was called. If he agreed with the medical evidence for the defence, the jury would probably return a verdict of insanity. If he disagreed, there was an issue which the jury must decide, but just as the doctors for the defence could speak only with certainty of the condition of the prisoner when they saw him, so the prison doctor and others called for the prosecution could speak only of their observation of the prisoner since he was taken into custody.

If the prisoner was insane at the time of the examination, it was reasonable to suppose that the jury would find a verdict of insanity. If there was any ground for supposing that the prisoner's mental condition was different at the time of the offence and at the time of the trial, that would be a matter which the judge would direct the jury to consider. No doubt there had been cases where a prisoner had recovered by the time of the trial but could be shown to have been mad at the time of the crime; here again the probable verdict would be insanity.

It followed that if there had been passed a verdict which amounted to a finding that the prisoner was sane both at the time of the crime and at the time of the trial, then unless there was a change in his mental condition after conviction a finding by a medical commission that he was insane—meaning that he was insane at the time of the commission of the crime—was a flat reversal of the verdict of the jury. It seemed most improbable that Parliament should ever have intended to give two or more medical practitioners power to reverse the finding of a jury by means of a private inquiry, a power given to no other persons or court in the country and which certainly the Court of Criminal Appeal did not possess. The true construction of the subsection, especially when read in conjunction with the remaining subsections of Section 2, was that the power was conferred to hold an inquiry where the prisoner became insane after conviction.

The Lord Chief Justice was asked a number of questions, in particular whether it would be wrong to hang someone who was insane in the medical sense. Lord Goddard said there was confusion between insanity as a disease of the mind and irresponsibility for action. The best instance was that of a man who was reprieved because he was a paranoiac; that man had gone to work in a cunning way knowing what he was going to do. The test that should be strictly applied was that of responsibility.

[1] *The Times*, January 6, 1950.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on December 15, 1949, the following degrees were conferred:

D.M.—R. G. Harrison, C. W. M. Whitty.

B.M.—J. C. S. Ainley-Walker, M. de G. Gribble, A. Ryle, J Hamill, A. S. Welbourne, I. K. Anderson, *J. H. Wakely, D. D Stephens, M. T. Ashcroft, D. E. Freeland, *R. W. Gilliatt, A. D Munro-Faure, G. M. Robertson, J. F. T. Allison, M. Brookes, H. I Jory, A. M. O. Blood, *W. H. J. Summerskill, J. E. von Bergen, L. Mackie, A. Cohen, H. V. James, M. C. Spencer, Mrs. Sheila von Bergen, Elizabeth F. Browne, Honor E. Bambridge, Faye V. Tallack, Patricia J. A. Cooper, Joan Wheelwright, Mrs. Edith M. W. Elliott

*In absence.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

FINAL M.B.—*Part II (Principles and Practice of Physic, Pathology and Pharmacology):* K. P. Abel, A. G. Ackerley, M. J. Ball, J. L. R Barlow, L. M. Barrett, Mrs. M. M. Bates, R. Baxter, R. G. Beard, I. F. Bishop, G. H. Bond, P. L. Broadhead, S. H. Busk, D. B Cathcart, M. B. S. Cooper, H. M. C. Corfield, S. J. Crews, G. H. J Dickinson, D. S. Eastwood, R. E. Eban, J. W. H. Elder, P. Elliott, G. R. C. Fisher, D. C. H. Garrod, A. C. Gibson, T. M. D. Gimlette, M. P. Goodson, G. F. Hargreaves, J. D. J. Havard, D. Hilson, G. C. Hoffman, F. W. Huddy, M. J. Hunter, G. F. Jolly, A. K Knowles, D. D. La Touche, A. S. Law, J. P. Lester, K. M McFadyean, A. McGregor, D. H. Mackenzie, M. Marshall, J. G. B Myles, D. H. Nixseaman, G. B. R. Oswald, D. J. D. Perrins, J. C. A Raison, M. Rayne, D. F. Richards, K. F. Robinson, W. Rodger, P. J. Roffey, T. B. Scott, I. H. Seppelt, J. O. Seville, R. C. Shepherd, P. H. Shorthouse, M. J. Smith, P. W. Sole, J T. B. Stewart, G. D Stones, O. K. Thomas, P. D. S. Thomas, P. R. Thompson, J. D. W Tomlinson, J. F. Trunchion, J. C. Turner, H. Wainstead, M. P Ward, R. H. R. White, E. J. C. Wynne.

UNIVERSITY OF LONDON

Professor G. R. de Beer will deliver a lecture on "Embryos and Ancestors" at University College, Gower Street, W.C., on January 26, at 1.15 p.m.

Professor Z. M. Bacq, of Liége, will deliver two lectures at St. Mary's Hospital Medical School (Wright-Fleming Institute Theatre), Paddington, W., on February 15 and 17, at 5 p.m. At the first lecture Professor Bacq will discuss "The Metabolism of Adrenaline" and at the second "The Potentiation of Biological Responses by Potassium Ions."

A lecture on "The Preservation of Science and Learning" will be delivered by Professor J. F. Danielli at King's College, Strand, W.C., on February 21, at 5.30 p.m.

Dr. Keith Simpson will deliver a lecture on "Murder" at King's College of Household and Social Science, 61, Campden Hill Road, W., on February 23, at 5.30 p.m.

A special University Lecture on "Synergism and Antagonism in Relation to Antibacterial Substances" will be delivered by Professor J. W. Bigger, Professor of Bacteriology and Preventive Medicine in the University of Dublin, at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., on February 27, at 5.30 p.m.

Professor G. Müller, of the University of Bonn, will deliver three special University Lectures on "*Formen der Neueren Deutschen Erzählkunst*" at the Senate House, Bloomsbury, W.C., on March 1, 3, and 8, at 5.15 p.m.

A lecture on "Planes of Nutrition in Relation to Growth, Pregnancy, and Lactation" will be delivered by Dr. D. P. Cuthbertson, Director of the Rowett Research Institute, Bucksburn, Aberdeen, at Wye College, Wye, near Ashford, Kent, on March 9, at 8.15 p.m.

The following candidates at the London School of Hygiene and Tropical Medicine have been approved at the examination indicated:

ACADEMIC POSTGRADUATE CERTIFICATE IN PUBLIC HEALTH.—K. J. Adams, A. S. Beadel, H. E. A. Carson, H. D. Conway, P. R. Cooper, D. Crichton, Naomi Doron, J. J. Duffy, C. C. Draper, F. O. Fernando, M. Gelfand, F. C. Griggs, L. F. Gunaratna, F. J. Ingham, I. S. Kadama, Doreen Landreth-Smith, M. M. Lewis, Low Chin Seang, Muriel J. Lowe, R. W. McConnachie, Alison D. McDonald, R. Malan, A. H. Memon, F. W. Mount, K. C. D. Perera, W. S. Perera, H. T. Phillips, Eileen M. Ring, G. E. de S. Rupasingha, Lore M. Schulte-Frohlinde, W. D. L. Smith, G. H. Stuart, Ping-Ming Teng, D. A. Thamotheram, J. D. Tonkinson, W. C. Turner, J. M. Urquhart, P. A. M. van de Linde, P. H. Vernon, J. L. Walsh, F. L. Wheaton, W. A. Young.

The following candidates have been approved at the examination indicated:

POSTGRADUATE DIPLOMA IN MEDICAL RADIOLOGY.—A. L. Frazer, D. Singh, S. M. Smith, R. J. Walton.

The following candidates have been approved at the examinations indicated:

M.S.—*Branch I (Surgery):* B. G. A. Lilwall, B. E. C. Stanley. *Branch IV (Laryngology, Otology, and Rhinology):* M. M. A. Cader.

UNIVERSITY OF LEEDS

At a meeting of the University Council held on December 21, 1949, it was announced that a grant of £5,000 had been made to Professor W. T. Astbury, D.Sc., F.R.S., by the Nuffield Foundation for fundamental investigations on rheumatoid arthritis.

The following appointments were made: *Senior Registrar and Tutor in Obstetrics and Gynaecology,* A. Ambery Smith, M.D., M.R.C.O.G. *Senior Registrar and Tutor in Psychiatry,* R. W. Crocket, M.B., Ch.B., D.P.M., F.R.F.P.S. *Senior Registrar and Tutor in Paediatrics,* J. G. Jamieson, B.M., B.Ch., D.C.H. *Registrar for work with Radioactive Isotopes in the Department of Medicine,* Gordon R. Fryers, M.D., M.R.C.P.

UNIVERSITY OF BRISTOL

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—Diana F. J. Duncan, A. R. Ebanks, Dorothy Field, Margaret J. Francis, G. C. K. Herapath, Ellen M. Marron, Jean Musgrave. *In Group II (Surgery and Obstetrics) only:* Margaret R. Salisbury

DIPLOMA IN PSYCHOLOGICAL MEDICINE (PART II).—Muriel J. Davies.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Dr. D. P. Cuthbertson will deliver the Dr. John Burns Lecture in the Hall of the Faculty (242, St. Vincent Street, Glasgow) on Wednesday, January 25, at 5 p.m. His subject is "Plane of Nutrition in Relation to Growth, Reproduction, and Susceptibility to Infection." Medical practitioners are invited to attend.

The Services

The Efficiency Decoration and 1st Clasp of the Territorial Army has been conferred upon Majors B. C. Jennings and J. M. Macfie and Lieutenant W. A. J. Davey, R.A.M.C., T.A.

The Efficiency Decoration of the Territorial Army has been conferred upon Majors H. Bloom, K. C. Hutchin, L. W. Lauste, M.B.E., A. E. K. Price, F. J. G. Slater, M.C., and H. F. Whalley, R.A.M.C., T.A.

DEATHS IN THE SERVICES

Colonel PETER MACKESSACK, D.S.O., who died on December 9, 1949, at Bournemouth, had been living in retirement for many years. He graduated M.B., Ch.B. at Aberdeen in 1896 and took the Cambridge D.P.H. in 1907. He was for a time A.D.M.S. of the 22nd Division in the Salonika Army and later he commanded the 63rd General Hospital.

Mr. Reginald M. Vick writes: I had the good fortune to work in daily contact with Peter MacKessack for many months, when I had charge of the surgical division of the 63rd General Hospital in the 1914–18 war. He was one of those quiet efficient Scotsmen who carried out their arduous duties with thoroughness and skill but with no fuss at all. His job was not an easy one. Hospital beds were very scarce in the malaria-ridden country of Macedonia. There were large numbers of wounded, and towards the end of 1918 we were flooded out with cases of pneumonia in the world-wide epidemic. I never once remember Peter getting rattled. He was a delightful person to work with and he was always calm and peaceful. He had a fund of humour—of the subtle sort so characteristic of the race from which he sprang. I would like to offer this humble tribute to his memory. He was the best commanding officer that I served under and a very perfect gentleman.

Lieutenant-Colonel RONALD MCROBERT, late I.M.S., died suddenly as the result of an accident on December 28, 1949, at Rangoon. He was 53 and the younger son of the late A. T. McRobert. He was educated at Gordon's College and the University of Aberdeen, but his medical studies were interrupted by the first world war, in which he saw service as a combatant officer in the Black Watch in Salonika and elsewhere. He graduated M.B., Ch.B. in 1922 and held resident appointments for two years in the Royal Victoria West Hants Hospital at Bournemouth. Entering the Indian Medical Service in 1924, McRobert put in the usual obligatory period of military service in India and Burma before being selected, in 1933, for civil employment under the Government of Burma, under which he held at one time or another most of the more important civil surgeoncies. In 1935 he took the M.R.C.O.G. Because of his exceptional aptitude for obstetrics and gynaecology he officiated on several occasions as Professor in the University of Rangoon, and was substantively appointed to the Chair in 1938.

His service during the evacuation was a record of outstanding gallantry and devotion to duty. At Prome, where there was a severe outbreak of cholera, by his influence and exertion he did much to steady the local population and to keep the communications open for the troops. Later at Mandalay during the Japanese bombardment, and at Myitkina, where he was charged with the invidious duty of ensuring that priority in air evacuation was given to women and children and the really sick, in whose care he was indefatigable, his courage and cheerfulness were an example to all and earned the highest praise. He refused evacuation himself and stayed in Burma in the tiny fringe of Arakan which remained in British possession until peremptorily recalled for other duties. These included appointment to the important post of chief medical officer, Delhi, but his eyes were always turned towards Burma, and as soon as he could he returned there, this time as a brigadier in the Civil Affairs Service, which followed closely the advance of the 14th Army. With the re-establishment of civil government he returned to his chair in Rangoon, which he held until Burma became independent. After a short period of leave at home, and true to his devotion to the country, he returned to Rangoon to private practice, and it was there that his untimely death occurred. As an all-round doctor he achieved high competence; but in obstetrics he excelled—he was meticulous, conservative, and full of resource. As a gynaecologist he had a rare clinical judgment and was a bold and successful operator. As a man he had a genius for friendship. In India or Burma, wherever men gathered together, "Ronnie" McRobert was known and spoken of with affection; and in spite of his high professional reputation it is as "Ronnie" McRobert that he will be remembered and that his death will be mourned. He is survived by his wife, a son, and two daughters, to whom the warm sympathy of all who knew him will be extended.—J. B. H.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a Summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended December 31. [No. 52

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949					1948 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	22	2	21	—	—	55	4	26	1	2
Deaths		—	—				2	1		
Diphtheria	102	10	26	2	1	225	22	31	10	3
Deaths	1	1	—	—	—	5	1	—	—	—
Dysentery	197	9	113	—	1	86	11	19	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—	1	—	2	—	1	—	—
Deaths		—					—			
Erysipelas			24	5	7			31	11	2
Deaths		1					1			
Infective enteritis or diarrhoea under 2 years				25					36	
Deaths	20	—	4	1	2	59	3	11	3	5
Measles*	1,978	47	21	56	145	4,490	251	163	174	23
Deaths†			—	1	—	1	—	1	—	—
Ophthalmia neonatorum	28	3	5	1	—	58	5	10	1	—
Deaths										
Paratyphoid fever	2	—	1 (B)	—	—	39	2	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	842	59	22	8	11	1,098	99	3	5	10
Deaths (from influenza)‡	28	5	4	1	—	35	7	5	—	1
Pneumonia, primary			362	44				284	41	
Deaths	311	49		18	3		60		18	12
Polio-encephalitis, acute	5	2				4	—			
Deaths							—			
Poliomyelitis, acute	61	12	1	3	—	59	7	5	2	—
Deaths§	8	—					—			
Puerperal fever		—	10				3	6		1
Deaths										
Puerperal pyrexia‖	50	4	6	—	1	112	11	11	—	—
Deaths		—					—			
Relapsing fever	—	—			—	1	—			—
Deaths										
Scarlet fever	2,327	159	255	111	196	1,786	125	298	42	34
Deaths†			—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	28	2	1	4	1	5	—	2	1	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,018	34	60	47	55	1,891	135	20	65	9
Deaths	2	1	1	—	1	5	—	—	1	—
Deaths (0–1 year)	308	29	51	21	17	420	41	73	28	22
Deaths (excluding stillbirths)	5,561	854	708	194	167	5,720	968	665	236	165
Annual death rate (per 1,000 persons living)			14·2	12·0				13·8	14·9	
Live births	5,924	900	870	288	223	9,608	1535	963	470	291
Annual rate per 1,000 persons living			17·4	17·8				19·4	29·7	
Stillbirths	167	14	26			227	31	26		
Rate per 1,000 total births (including stillborn)			29					26		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* there were increases in the notifications of measles 294, acute pneumonia 208, whooping-cough 82, typhoid fever 25, and diphtheria 21. There were decreases in the incidence of scarlet fever 89 and dysentery 24.

Small decreases in the incidence of scarlet fever occurred in most areas; the largest variations in the local trends were increases in Cheshire 106 and Lancashire 74. The rise in the notifications of scarlet fever in Cheshire was due to an outbreak in Bucklow R.D., where 101 cases were notified during the week.

The largest increases in the notifications of measles were: Lancashire 104 and Staffordshire 64, these rises being largely contributed by Liverpool C.B. and Stoke-on-Trent C.B. respectively.

The chief changes in the local trends of diphtheria were rises in Lancashire 15 (in Liverpool C.B. the notifications rose from 5 to 22) and Warwickshire 7 (in this county 12 cases were notified in Birmingham C.B.).

Except for an increase of 45 in Yorkshire West Riding, the notifications of whooping-cough varied only slightly from the totals of the preceding week. A rise in the incidence of acute pneumonia occurred throughout the country; the largest increases were Lancashire 35 and London 30.

Of the 28 cases of typhoid fever 16 were notified in the Port Health District of London. The largest returns of dysentery were: Northumberland 69 (Newcastle-upon-Tyne C.B. 69); Yorkshire West Riding 27 (Leeds C.B. 21); Sussex 20 (Horsham R.D. 20); Worcestershire 17 (Bromsgrove U.D. 15); Staffordshire 14 (Smethwick C.B. 12); and Glamorganshire (Penarth U.D. 6).

In *Scotland* there were increases in the notifications of dysentery 46 and acute primary pneumonia 66, while a decrease of 34 was recorded in the incidence of scarlet fever. The largest returns for dysentery were: Glasgow 42, Edinburgh 31, Stirling county 12, and Perth and Kinross county 12.

In *Eire* there were 30 more notifications of scarlet fever than in the preceding week. A further 32 cases of measles were notified from the outbreak in Waterford, Carrick-on-Suir No. 2 R.D.

In *Northern Ireland* there were increases in the notifications of measles 38, scarlet fever 20, and whooping-cough 11.

Quarterly Returns for England and Wales

The birth rate during the third quarter of 1949 was 16.6 per 1,000; this rate was 1.4 below the average of the five preceding September quarters. Infant mortality was 26 per 1,000 births and was the lowest rate ever recorded for any quarter, being 2 below the rate for the third quarter of 1948, the previous lowest rate. The stillbirth rate, 21.9 per 1,000 total births, was also the lowest rate recorded. The general death rate was 9.2 per 1,000 and was 0.1 below the average of the five preceding third quarters. Deaths attributed to acute poliomyelitis and polio-encephalitis during the quarter numbered 250.

Quarterly Return for Eire

The quarterly return for June, just published, shows that the birth rate was 22.2 per 1,000, being 1.8 below the rate for the second quarter of 1948. The infant mortality was 50 per 1,000 registered births and was 4 above the rate of the preceding second quarter. The general death rate at 13.3 per 1,000 was 0.7 above the rate for the June quarter of 1948. Deaths attributed to the principal infectious diseases numbered 168, of which 79 were due to diarrhoea and enteritis, 57 to whooping-cough, and 24 to measles. Deaths from pulmonary tuberculosis numbered 597, with 152 from other forms of tuberculosis, and were 105 less and 2 more, respectively, than the totals for the preceding second quarter.

Week Ending January 7

Notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,798, whooping-cough 1,379, diphtheria 75, measles 2,337, acute pneumonia 1,120, meningococcal infection 39, acute poliomyelitis 54, dysentery 199, paratyphoid fever 3, typhoid fever 28. In the great towns 52 deaths were attributed to influenza.

Medical News

Register of Orthoptists

A new edition of the *Register of Orthoptists* has been published by the Board of Registration of Medical Auxiliaries. Medical practitioners may obtain copies free of charge on application to the registrar of the Board at B.M.A. House, Tavistock Square, London, W.C.1.

Prescribed Diseases

Regulations have been made extending insurance under the National Insurance (Industrial Injuries) Act, 1946, to cases of cancer of the mucous membrane of the nose or associated air sinuses, and of primary cancer of the bronchus or lung, in certain occupations where there is a risk of contracting these diseases. The occupations are specified as follows: "Any occupation in a factory where nickel is produced by decomposition of a gaseous nickel compound which involves work in or about a building or buildings where that process or any other industrial process ancillary or incidental thereto is carried on." They also provide that a person suffering from any of these diseases on December 19, 1949, shall be treated as not having developed the disease before that date. The regulations are the National Insurance (Industrial Injuries) (Prescribed Diseases) Amendment (No. 3) Regulations, 1949.

Gordon-Taylor Prize

Messrs. Grayton Brown, H. H. Eddey, R. S. Lawson, J. S. MacMahon, and K. W. Starr, who are Hallett Prizewinners and Fellows of the Royal Australasian College of Surgeons, have provided a fund to endow a prize valued at £5 5s. for the Primary Examination for Fellowship of the College. At their request, and with the consent of Sir Gordon Gordon-Taylor, the prize will be known as the Gordon-Taylor Prize.

Fellowship for Freedom

The Fellowship for Freedom in Medicine, whose chairman is Lord Horder, has become a limited liability company. Its membership has now reached 3,000.

Gastro-enterology Prize

The National Gastroenterological Association will hold an Annual Cash Prize Award Contest for 1950. One hundred dollars and a certificate of merit will be given for the best unpublished contribution on gastro-enterology or allied subjects. Certificates will also be awarded to those physicians whose contributions are deemed worthy. Contestants residing in the United States must be members of the American Medical Association; those residing in foreign countries must be members of a similar organization in their own country. The winning contribution will be selected by a board of judges and the award made at the Annual Convention Banquet of the National Gastroenterological Association in October. Entries should be limited to 5,000 words, be typewritten in English, prepared in manuscript form, submitted in five copies accompanied by an entry letter, and must be received not later than June 1. They should be addressed to the National Gastroenterological Association, 1819, Broadway, New York, 23, N.Y., U.S.A.

Visits to North America

It is hoped that any medical men and women who intend to visit North America will inform the Secretary of the B.M.A. so that information of such visits may be forwarded to the Canadian Medical Association, which is anxious to be of help to doctors from the United Kingdom visiting North America.

Wills

Dr. Angus Vallence MacGregor, formerly of West Hartlepool, left £49,057. Dr. Guy Thornton Birks, of Bedford, left £21,722; Dr. Annie Dorothea Symons, of Bournemouth, £7,686; Dr. Maurice Newfield, of Great Bardfield, Essex, £2,080; and Dr. John Curtis Webb, of Cheltenham, £44,574.

COMING EVENTS

Medical Society of London

The second half of the 1949–50 session of the Medical Society of London opened on January 9, when a discussion on virus pneumonia was introduced by Dr. N. Lloyd Rusby and Dr. Joseph Smart. Other meetings have been arranged as follows: January 23, 8.30 p.m., pathological meeting; February 13, 8.30 p.m., discussion on "Chronic Hepatitis," to be introduced by Professor John McMichael and Mr. J. H. Milnes Walker; February 20 and 27 and March 6, 8.30 p.m., Lettsomian Lectures by Mr. A. Dickson Wright on "Surgical Aspects of Hyperpiesia"; March 13, 8.30 p.m., discussion on "Peripheral Arterial Disease," to be introduced by Professor A. M. Boyd and Dr. Geoffrey Evans; April 3, 8.30 p.m., discussion on "Ulcerative Colitis," to be introduced by Professor T. L. Hardy and Mr. Michael J. Smyth; April 24, 8.30 p.m., discussion on "Non-malignant Affections of the Oesophagus," to be introduced by Mr. N. R. Barrett and Mr. R. H. Franklin; May 8, 8 p.m., annual general meeting followed, at 8.30 p.m., by the Annual Oration by Sir Henry Souttar on "Observation, its Meaning and Importance." All the above meetings will be held at 11, Chandos Street, Cavendish Square, London, W. The annual dinner of the society will be held at Claridges Hotel, Brook Street, London, W., on March 9.

Society for Endocrinology

The Society for Endocrinology has arranged a lecture on "The Nature of Adrenocorticotropic Hormone (ACTH)" to be given by Dr. C. H. Li (Institute of Experimental Biology, University of California, Berkeley, California) at the Royal Society of Medicine, 1, Wimpole Street, London, W., on Thursday, January 26, at 5 p.m. Admission is free, without ticket.

Association of Clinical Pathologists

The winter meeting of the Association of Clinical Pathologists will be held at the Royal Pavilion, Brighton, on January 26, 27, and 28.

Society of Medical Officers of Health

The annual dinner of the Services Hygiene Group of the Society of Medical Officers of Health will be held at the Quadrant Restaurant, 74, Regent Street, London, W., on Friday, January 27, at 7 for 7.30 p.m., when all hygiene officers, past or present, whether members or not, are invited to attend. The cost is 14s. per head exclusive of wines, and applications should be sent to Dr. G. M. Frizelle, London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1. Dress, dinner jackets with decorations.

American Congress of Obstetrics and Gynaecology

The Fourth American Congress of Obstetrics and Gynaecology will be held on May 14–19, 1950, at the Hotel Statler, New York City. The preliminary programme for the scientific sessions is as follows: Morning meetings on May 15 to 19: general sessions on (1) Physiology of Human Reproduction, (2) Pathology of Human Reproduction, (3) Social and Economic Problems, (4) Neoplastic Diseases of the Female Reproductive System, and (5) Obstetric and Gynaecological Procedures. Inquiries should be addressed to Dr. Fred L. Adair, 24, West Ohio Street, Chicago, 10, Illinois.

History of Medicine

The Sixth International Congress on the History of Science will be held at Amsterdam on August 14–20. There will be a section on the history of medicine which will constitute the 16th Congress of the Union Internationale d'Histoire de la Médecine. Those wishing to read papers at the congress should send them in before May 1. Full particulars may be obtained from Professor Ir R. J. Forbes, Haringvlietstraat 1, Amsterdam-Z, the Netherlands.

Osler Club

The next meeting of the Osler Club will be on Friday, January 27, at 8 p.m., at the Medical Society of London, 11, Chandos Street, W.1. Dr. R. M. B. MacKenna, dermatologist to St. Bartholomew's Hospital, will speak on the history of dermatology, with special reference to Unna's life and works.

SOCIETIES AND LECTURES

Monday

LONDON UNIVERSITY.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., January 23, 5.30 p.m., "*Origin and Functions of Globulins and Antibodies*," by Professor P. Grabar (Pasteur Institute, Paris).

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, W.—January 23, 8.30 p.m., Pathological meeting.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, London, W.—January 23, 3 p.m., "*Diabetes*," Harben Lecture by Dr. George Graham.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—January 23, 4.30 p.m., "*Biochemistry of Carotenoids*," by Professor R. A. Morton.

Tuesday

EUGENICS SOCIETY.—Royal Society, Burlington House, Piccadilly, London, W., January 24, 5.30 p.m., "*Fitness and Survival*," by Dr. C. A. B. Smith, Ph.D.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—January 24, 5 p.m., "*Recent Additions to the Museum*," Erasmus Wilson Demonstration by Mr. L. W. Proger.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, London, W.—January 24, 3 p.m., "*Diabetes*," Harben Lecture by Dr. George Graham.

Wednesday

MEDICO-LEGAL SOCIETY.—At 26, Portland Place, London, W., January 25, 8.15 p.m., "*Rex v. Haigh—The Acid Bath Murder*," by Dr. C. Keith Simpson.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, 242, St. Vincent Street, Glasgow.—January 25, 5 p.m., "*Plane of Nutrition in Relation to Growth, Reproduction, and Susceptibility to Infection*," Dr. John Burns Lecture by Dr. D. P. Cuthbertson.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE, 28, Portland Place, London, W.—January 25, 3 p.m., "*Diabetes*," Harben Lecture by Dr. George Graham.

SCOTTISH SOCIETY OF THE HISTORY OF MEDICINE.—At Art Gallery, Kelvingrove Park, Glasgow, January 25, 2.15 p.m. Seventh Meeting. "*A Brief Survey of British Dentistry—Charles Allen (1686)—Dentists' Act, 1878*," by Dr. J. Menzies Campbell.

SOCIETY OF CHEMICAL INDUSTRY: FOOD GROUP.—At Burlington House, Piccadilly, London, W., January 25, 6.15 p.m., meeting of Nutrition Panel. "*The Vitamins: Up-to-date Review*," by Dr. W. F. J. Cuthbertson.

Thursday

ROYAL SANITARY INSTITUTE.—At Guildhall, Maidenhead, January 26, 10.30 a.m., "*Typhoid—With Particular Reference to the Crowthorne Epidemic, 1949*," by Dr. W. B. Moore; "*Frozen Confectionery*," by Mr. F. G. Bishop.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—January 26, 4.30 p.m., "*Psychiatry*," lecture-demonstration by Dr. M. A. Partridge.

SOCIETY OF ENDOCRINOLOGY.—At Royal Society of Medicine, 1, Wimpole Street, London, W., January 26, 5 p.m., "*The Nature of Adrenocorticotropic Hormone (ACTH)*," by Dr. C. H. Li.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—January 26, 1.15 p.m., "*Embryos and Ancestors*," by Professor G. R. de Beer.

Friday

KENT AND CANTERBURY HOSPITAL, Canterbury.—January 27, 8.30 p.m., clinical meeting.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, Maida Vale, London, W.—At Medical School, January 27, 5 p.m., Neurological Demonstration by Dr. P. H. Sandifer.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, London, W.—January 27, 8 p.m., "*Recent Advances in Microscopy*," by Dr. A. S. McFarlane.

ROYAL INSTITUTE OF PHILOSOPHY, 14, Gordon Square, London, W.C.—January 27, 5.15 p.m., "*The Philosophy of Human Nature and the Science of Human Nature*," by Mr. Karl Britton.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh, January 27, 8 p.m., "*Head Injuries*," by Sir Hugh Cairns.

UNIVERSITY COLLEGE, Gower Street, London, W.C.—January 27, 5.15 p.m., "*Aspects of Pharmacological Chemistry*," by Dr. F. Bergel.

Saturday

NUTRITION SOCIETY.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London, W.C., January 28, 10.20 a.m., "*Commonwealth Contributions to the British Diet*."

APPOINTMENTS

Dr. P. V. Pritchard, Medical Officer of Health for County Antrim, has been appointed chairman of the Northern Ireland Association of Local Government Officers for 1950.

Sir Basil Hamilton Hebden Neven-Spence, M.D., F.R.C.P.Ed., M.P., has been appointed Vice-Lieutenant of the County of Zetland.

CONWAY-HUGHES, J. H. Ll., M.R.C.S., L.R.C.P., D.M.R.D., Consultant Radiologist, Isle of Wight Hospital Group.

DARKE, C. S., M.D., M.R.C.P., Consultant Physician, City General Hospital and Physician, Thoracic Surgical Unit, Sheffield.

JONES, M. T. ISLWYN, M.D., D.P.H., Deputy Medical Officer of Health and Deputy School Medical Officer to County Borough of Bournemouth.

MAILER, W. A. R., L.M.S.S.A., Regional Medical Officer, Scottish Region, British Railways.

MASON CLINIC, Seattle, Washington, U.S.A.—*Surgeon, Department of Urology*, James Tate Mason, jun., M.D., F.A.C.S. *Associate, Department of Medicine*, Randolph P. Pillow, M.D.

MIDDLESEX HOSPITAL, London, W.—The following appointments to the Consultant Staff of the hospital are announced: *Assistant Radiotherapist*, Margaret D. Snelling, F.R.C.S., M.R.C.P., D.M.R. *Assistant Physician to Department of Physical Medicine*, A. C. Boyle, M.D., M.R.C.P., D.Phys.Med. *Assistant Surgeon*, O. V. Lloyd-Davies, M.S., F.R.C.S.

ROYDE, C. A., M.D., D.P.H., F.S.S., Assistant Administrative Medical Officer, Sheffield Regional Hospital Board.

SHONE, S., O.B.E., M.D., M.R.C.P., Deputy Administrative Medical Officer, Sheffield Regional Hospital Board.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Gurd.—On January 8, 1950, at the Lindo Wing, St. Mary's Hospital, London, W., to Thérèse, wife of Surgeon Commander Dudley P. Gurd, M.D., F.R.A.C.S., a daughter.

Landon.—On January 3, 1950, at 51, Manor Road, Solihull, Warwickshire, to Stella (nee Charter), wife of Dr. J. J. Landon, a daughter.

Proudlove.—On January 10, 1950, at the Royal Free Hospital, to Prudence, wife of Dr. Kevin Noble, a son—Timothy Kevin.

MARRIAGE

Pillai—Anthony.—On December 31, 1949, at the Soar Chapel, Swansea, Sundram Pillai, M.B., B.S., F.R.C.S., to Catherine Lenora Anthony, S.R.N.

DEATHS

Allen.—On January 9, 1950, at Ivy House, Hawkshead, Ambleside, William Edlund Lawrence Allen, M.B., C.M., aged 84.

Allott.—On January 5, 1950, at his home, 13, Sandybed Crescent, Scarborough, Yorks., James Henry Leach Allott, M.B., C.M., aged 88.

Archer.—On December 26, 1949, at Burleigh House, Highfield, Scarborough, Henry Archer, L.S.A.

Bailey.—On December 26, 1949, at Hayesleigh, Yelverton, Devon, John George Bailey, M.B., C.M.

Batten.—On January 8, 1950, at 17, Ravenscourt Square, London, W., Herbert Ernest Batten, F.R.C.S.

Chaplin.—On December 25, 1949, Clement Woodthorpe Chaplin, M.D., of Angmering, Sussex, aged 74.

Clarkson.—On December 16, 1949, at Watford, Colin Campbell Clarkson, M.B.

Cruden.—On December 24, 1949, at 3, Anson Road, London, N.W., Robert Cruden, M.B., C.M.

Fenton.—On December 29, 1949, at a nursing-home, Aberdeen, Alexander Fenton, M.B., C.M., Colonel, I.M.S., Ret.

Kirk.—On December 30, 1949, at Boscombe Hospital, Bournemouth, Thomas Joseph Kirk, M.B., Ch.B., of 2, Stirling Court, Manor Road, Bournemouth, late of Norton, Stockton-on-Tees, Co. Durham, aged 68.

Law.—On December 23, 1949, John Spence Law, M.B., C.M., of the Royal Norfolk and Suffolk Yacht Club, Lowestoft, aged 87.

Lovelock.—On December 28, 1949, in Brooklyn, New York, U.S.A., John Edward Lovelock, B.M., B.Ch.

Lyall.—On December 21, 1949, at Edinburgh, William Leslie Lyall, M.B., F.R.C.P.Ed.

McRobert.—On December 28, 1949, at Rangoon, Burma, the result of an accident, Ronald McRobert, M.B., F.R.C.O.G., Lieutenant-Colonel, I.M.S. Ret., aged 53.

Middleweek.—On January 3, 1950, Frederick Francis Middleweek, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., late Major, R.A.M.C., of 511, Clive Court, London, W., aged 79.

Mitchell.—On December 1, 1949, at Royal Hospital, Perth, Western Australia, Robert Macfarlane Mitchell, M.B., F.R.C.S.Ed., D.P.H., late of Edinburgh, aged 73.

Mulvany.—On December 23, 1949, at 37, Muswell Avenue, Muswell Hill, London, N., Thomas Edward Mulvany, M.R.C.S., L.R.C.P., aged 81.

Murray.—On December 31, 1949, at Hythe, Kent, John George Patrick Murray, M.D., F.R.C.S.Ed., Lieutenant-Colonel, I.M.S., Ret.

Pare.—On December 25, 1949, at 5, Leadhall Avenue, Harrogate, Yorks, Henry Burton Pare, M.B., Ch.B., formerly of Royston, Yorks, aged 67.

Pead.—On December 24, 1949, at Bexhill-on-Sea, John Hunter Pead, M.B., B.Ch., Surgeon Captain, R.N., Ret., formerly of Rye, aged 81.

Pesel.—On December 29, 1949, in hospital, Howard George Pesel, M.C., M.D., of Fritham, Hants, aged 72.

Platt.—On December 26, 1949, at Fernleigh, Alderley Road, Wilmslow, near Manchester, John Noble Platt, M.R.C.S., L.R.C.P., aged 78.

Scales.—On December 21, 1949, in London, Cuthbert Scales, *M.C.*, M.B., Ch.B., Brigadier, late R.A.M.C.

Unitt.—On December 22, 1949, at the Fielding Johnson Hospital, Leicester, James Arthur Unitt, M.R.C.S., L.R.C.P., aged 89.

Upcott Gill.—On December 31, 1949, at Wrafton House, Ryde, Isle of Wight, Geoffrey Allen Upcott Gill, F.R.C.S.Ed., aged 71.

Wolverson.—On December 27, 1949, in a Folkestone nursing-home, Frederick Wolverson, M.D., J.P., of 17, Kingsworth Gardens, Folkestone, Kent, aged 75.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Recurrent Pulmonary Infarction

Q.—*What is the treatment for recurrent pulmonary infarction? The patient, a man of 50, has had three attacks in two months involving both the right and the left base, following thrombophlebitis in the right leg and left popliteal fossa. The symptoms consist of violent pains, syncope, and the coughing up of blood-stained sputum. So far penicillin, sulphamezathine, nikethamide, and morphine have been used in treatment. The local hospital is not keen on anticoagulants. Except for varicose veins, the patient was healthy until two months ago.*

A.—As no other factor has been mentioned as a contributory aetiological cause, it must be presumed in this case that thrombophlebitis has occurred in varicose veins in an otherwise healthy man. The treatment mentioned would have no effect whatsoever on the course of the condition, morphine being of use only in relieving pain. Anticoagulants are, of course, the treatment of choice, it having been abundantly demonstrated by Barker, Bauer, Jorpes, and Zilliacus, and many others, that this treatment almost entirely removes the risks attendant on the spread of thrombosis and its occurrence elsewhere. This treatment requires, of course, careful and effective laboratory control. However, as the local hospital is reluctant to use anticoagulants recourse must be had to other means of treatment. In a man who has already suffered three apparently serious pulmonary infarcts, ligation of the vein proximal to the thrombus is indicated. As the thrombophlebitis is situated in the right leg and left popliteal fossa, it would be feasible, under local analgesia, carefully and gently to explore the deep femoral veins and, if they are free from clot, to ligate them. Exploration above this site may be necessary.

Other points in treatment that should be mentioned are local heat to the whole leg by electric cradle or hot-water bottle, immobilization and elevation of the legs by sloping board or pillow, and avoidance of straining on bedpans or of deep breathing as in examination of the chest by the doctor in charge. The giving of copious fluids will help to obviate haemoconcentration. After the patient is up and about, the wearing of elastic stockings and the prompt treatment of possible recurrences of varicose veins or phlebitis will tend to lessen the probability of a repetition of the pulmonary infarction.

"Pseudo-bowing" of the Legs

Q.—*I see a large number of children, aged between 1 and 2 years and often overweight, with strikingly bowed legs. There are usually no clinical symptoms of rickets beyond, perhaps, late dentition and a fairly wide fontanelle. All these children have been given cod-liver oil in adequate doses. I have sent many of them to the radiologist for confirmation of the diagnosis, and the report has invariably been "N.A.D." Is this a mild manifestation of rickets and is any treatment needed, or does the condition correct itself?*

A.—The question probably describes "pseudo-bowing" caused by the soft parts of the child's legs. A relatively dense x-ray picture will often show perfectly straight bones with the soft parts around producing a marked degree of apparent bowing. It is significant that such children are usually fat, with an excessive muscular development of the legs. If the observer will hold the heels together with one hand he can often, with the other, so press the muscles together at the back of the legs that the bowing, obvious on standing, disappears. Another point to note is that in genuine bowing due to rickets there is usually angulation of the lower end of the tibia and fibula, most often laterally but sometimes antero-posteriorly, and this is absent in cases of pseudo-bowing. Sheldon was one of the first to draw attention to this condition, and there is also a reproduction of a radiograph in the last edition of Hutchinson's *Lectures on Diseases of Children* (Edward Arnold, London, 1944, 9th ed., p. 163).

Urticaria after Diphtheria Immunization

Q.—*Is a general urticarial reaction common after the injection of diphtheria prophylactic? Twenty-six days after a girl of 2 years was given her first injection of diphtheria prophylactic (0.5 ml. P.T.A.P.) oedema of both feet developed, followed by a general urticarial rash some hours later. No other cause for this was discovered. Would a second dose of antidiphtheria prophylactic be advisable? If so, what substance would you recommend and what precautions?*

A.—An urticarial rash with oedema is very rare after diphtheria immunization, and the fact that in this case it came on as late as 26 days after the injection suggests that the reaction was not related to the P.T.A.P. (purified toxoid precipitated by aluminium phosphate). It does, however, indicate that the child may have an allergic diathesis, and she should therefore not be given an injection of any foreign protein such as diphtheria antitoxin until she has been tested for sensitivity to such a substance. Before giving her the second injection of P.T.A.P. it would be advisable to carry out the Schick test. If there is a pseudo-reaction with the control Schick test material no further injection should be given for six months, when Schick testing should be repeated. If now there is no pseudo-reaction a further injection of 0.5 ml. P.T.A.P. should be given irrespective of whether the Schick test gave a positive or a negative reaction.

Bitumen in Water-softeners

Q.—*I understand that in some of the water-softeners on the market solid bitumen is applied in a molten state to the internal surface of the apparatus. I would be interested to know if this could be detrimental to health if the water were used for drinking purposes. Also is there any possibility that water which has been in contact with bitumen may be carcinogenic?*

A.—Apart from its use in water-softeners, electro-deposited bitumen, which is quite colourless and tasteless, is also used as a lining for water-pipes (see *Chem. Abstracts*, 1934, **28**, 24416). There are apparently two forms of bitumen, one of which is the residue of pitch distillation, and this form is known to contain carcinogenic substances. In the absence of further information it is clearly impossible wholly to exclude any hazard to health. It should, however, be pointed out that the water-solubility of the substances likely to be concerned, if they are present at all in the preparation employed, is in many instances almost negligibly small.

Treatment of Migraine

Q.—*What is the treatment for incapacitating migraine? In a woman of 39 this started six years ago and has become progressively worse, of longer duration, and more resistant to drugs. The pain is very punctual, occurring exactly on the 14th day of the menstrual cycle and again on the day preceding menstruation—the 25th day of the cycle. It now lasts three to four days. It is accompanied by heartburn and an intense craving for sweets. It is relieved only for a short time by ergotamine tartrate.*

A.—Unfortunately there is no specific treatment which can invariably be relied upon to control migraine, and it is necessary to test the available remedies in each case. Since the patient obtains some relief from ergotamine tartrate it would be wise to begin treatment by giving a prophylactic dose of 1 mg. every night at bedtime. If that fails, the patient might take nitroglycerin, 1/200 gr. (0.32 mg.) night and morning. Some patients benefit greatly from the antihistamine drugs, which can be given either alone or in combination with nitroglycerin. "Benadryl," 50 mg., could be given night and morning, or 100 mg. at bedtime if the morning dose makes the patient sleepy. Phenobarbitone in small doses given regularly for a long period has an established place in treatment, but

sodium diphenylhydantoin is often the more effective sedative in doses of 1½ gr. (0.1 g.) daily. Urea is sometimes helpful and should be given in a dose of 20 gr. (1.3 g.) in water three times a day for a week, twice a day for another week, and subsequently daily for a long period. Finally, in view of the relationship to the menstrual cycle, oestrogens should be tried.

Thyrotropic Exophthalmos and Exophthalmic Ophthalmoplegia

Q.—*What are the main points in the diagnosis of thyrotropic exophthalmos and exophthalmic ophthalmoplegia? What are the urinary findings? Can the finding of thyrotropic hormone be considered as diagnostic, and is this test easily performed? Apart from protecting the cornea by tarsorrhaphy or orbital decompression, is any treatment of value?*

A.—Clinical exophthalmic ophthalmoplegia occurs (1) with thyrotoxicosis and (2) after thyroidectomy; there is also (3) an idiopathic group. As regards the thyrotoxic group, some take the view that there is no clear differentiation between simple exophthalmos associated with thyrotoxicosis and exophthalmic ophthalmoplegia. For practical purposes, if the exophthalmos is of severe degree and associated with limitation of movement of the external ocular muscles, and if it is progressive and out of proportion to the degree of thyrotoxicosis, the term "exophthalmic ophthalmoplegia" is applicable. In the post-thyroidectomy group, where the exophthalmic ophthalmoplegia develops in association with a lowered basal metabolism and improves with the administration of thyroid extract, the condition has been shown to be associated with an excessive secretion of pituitary thyrotropic hormone, which is abolished by giving thyroid extract. This group clinically, and experimentally the evidence in animals of pituitary thyrotropic hormone secretion, form the basis for the thyrotropic theory of exophthalmos. The presence of an excess of thyrotropic hormone in the serum can be established by biological means, the thyroid becoming enlarged and hyperplastic in dogs or rats into which the serum has been injected as compared with controls. The investigation entails research work and is not a routine clinico-pathological test. A positive finding would be an important factor in coming to a diagnosis from an aetiological point of view.

As to treatment, the only clear-cut results are obtained with thyroid extract in those cases associated with a low basal metabolism and a high serum-cholesterol level. In the remaining cases partial amelioration may in a small percentage of cases result from treatment with large doses of oestrogens or androgens or by irradiation of the pituitary gland, and more recently some improvement has been obtained by local irradiation of the orbital contents. The other measures mentioned in the question certainly have their place, including plastic operations on the eyelids and redundant conjunctiva.

Painful Nipples in Pregnancy

Q.—*A primigravida aged 27, 20 weeks pregnant, has had painful breasts from the sixth week of pregnancy. This starts as a dull ache in the breasts, which feel tense and are tender on palpation. One or the other nipple becomes erect and the lower two-thirds of the nipple blanches. This is associated with unbearable pain deep to the nipple. After half an hour all symptoms and signs disappear. At first the attacks occurred only on getting up in the morning, but now they may start at any time in the day. Cold may sometimes initiate an attack. There is no past history of disease of the breast. Can you tell me the cause of this condition and the treatment?*

A.—This condition probably represents an exaggerated form of the breast discomfort experienced in normal pregnancy rather than a pathological state. All the features mentioned are typical. There may be a background of over-anxiety and introspection. There is no specific remedy, but the wearing of warmer underclothing might decrease the tendency to temporary vascular changes which underlie or bring on the various manifestations. In any case, the breasts are likely to get more comfortable as pregnancy progresses.

NOTES AND COMMENTS

Immunization Against Colds.—Dr. F. CORT (Whitburn, Co Durham) writes: In "Any Questions?" (November 19, p. 1189) your answer to the following question, "Is there any method of immunization which will protect an individual against recurrent catarrhal colds during the winter?" states, "It seems likely, however, that secondary bacterial infection is a common complication of the primary coryza, probably as a result of damage to the respiratory mucosa." This statement is in agreement with the theory of the aetiology of the common cold I outlined in your *Journal* of April 17, 1948 (p. 758), which led to my use of antihistaminics in the treatment of the common cold. My own investigations show that the primary coryza can be due to any irritant of the respiratory mucosa, and that the early rhinorrhoea is only an excessive activity of the body defences and is due to local histamine activity. For this reason it is possible to abort 90–95% of cases if a sufficient antihistamine block is established locally before the secondary infection of the oedematous mucosa occurs. My own results over the past three and a half years show this to be true, and consequently the prophylactic treatment of persons susceptible to frequent attacks of coryza must be entirely different from protection against the organisms of secondary or chronic infection. The logical conclusion from my theory of deficient glycogen storage and excessive production of intracellular histamine by protein breakdown is that the preventive treatment should be administration of glucose with vitamin C. This also applies to other conditions associated with histamine activity, and I am now finding that attacks occur with considerably less frequency in the cases I am treating in this way.

This relation of vitamin C to glycogen storage and protein breakdown was substantiated by the experiences of the successive expeditions of the Falkland Islands Dependencies Survey reported by Dr. J. M. Roberts in the *Journal* of October 15 (p. 863). The first group contracted "colds" frequently after contact with the dust from unpacking blankets, and also they developed scorbutic signs. The second group received 50 mg. of ascorbic acid daily and did not suffer from colds until they returned to so-called civilization or the relief ship arrived. My own results, which incidentally have also been confirmed by the findings of Brewster of the U.S. Naval Academy, Washington, show that evidence is rapidly accumulating to prove that the primary pathology of the common cold is local histamine activity causing local vasodilatation with serous exudation from the mucous membranes, which is followed by secondary infection by the groups of organisms you refer to in your reply.

Parkinsonism.—Dr. C. R. MAY (Erith, Kent) writes: Under "Any Questions?" (December 10, p. 1366) it was stated that trihexyphenidyl ("artane") is not procurable as yet in this country. This is not so. I have used it for the past two months in eight cases (four with almost total relief of symptoms, three with slight effect, one with no change). In six of the cases the most marked effect was in relief of the mental state. Diminution of tremor was second. Increased ability to perform fine movements was increased and vision was improved. The average daily dose was about 8 mg. In none of the cases has it yet been possible to stop completely other forms of therapy, but the use of other drugs has been greatly reduced. The period of usage is too short to make any dogmatic statement on efficacy, but the initial results are at least promising. Only one of the patients was a confirmed case of post-encephalitic Parkinsonism. The others are of the arteriosclerotic types.

Beddage.—The Leeds (Group B) Hospital Management Committee No. 22 has now published its first annual report, in which it is noted that the "beddage of the hospitals in this Group is approximately 2,000." The report contains much detailed information but readers will be disappointed to find no details about blanketage, sheetage, or hotwaterbottleage.

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